

Saskatchewan Interpretations



Electrical Inspections Department

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www.saskpower.com

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Preface and Scope

The Canadian Electrical Code, Twenty-Second Edition, as supplemented and amended by these requirements, issued under Section 5 of *The Electrical Inspection Act, 1993*, shall govern the workmanship and all other matters whatever pertaining to electrical equipment and the installation of electrical equipment in or upon any land, buildings, structures, and premises. It contains supplementary and amendatory requirements which by their inclusion herein are adopted as requirements under Section 5 of *The Electrical Inspection Act, 1993*.

Table of Contents

PREFACE AND SCOPE	1
Website Information	7
Bond Notice Administration Fees	7
SECTION 2 - GENERAL RULES	7
2-004 - Permit	7
Permit Information	7
Internet Permit Entry	8
Permits for Low Voltage and Extra Low Voltage Installations	8
Permits for Oil Field Installations	9
2-012 - Inspection Request Required	9
2-014 - Plans and Specifications	9
2-022 - Renovations of Existing Installations	12
Connection or Reconnection	12
Flood Procedures	12
Electrical Systems Exposed to Fire	12
2-024 - Use of Approved Equipment	13
Labels Required for Manufactured Homes	13
Cable Ties	13
Equipment Approval Certification	13
Field Inspection Certification	13
2-024 - Use of Approved Equipment - Exceptions	20
2-030 - Deviation or Postponement	20
2-035 - Oil and Gas Field Installations	20
2-102 - Rebuilt Equipment	20
Retrofit kits and installation requirements	20
2-200 - Protection of Equipment	22
Commercial Automobile Receptacles	22
2-306 - Shock and Flash Protection	22
SECTION 4 - CONDUCTORS	22
4-004 & 4-006 - Application of New Changes to Conductor Sizing	22
Example 1	23
Example 2	23
Example 3	24
4-006 - Termination Temperature Limitations	24
Ratings for Common Residential Services	26
4-010 - Induced Voltages and Currents in Metal Armour or Sheaths of Single Conductor Cables	27
4-024 - Harmonics - Sizing Neutral Conductors	28
4-038(3) - Colour Coding of Conductors	28
4-042 - DLO Cable	28
SECTION 6 - SERVICES AND SERVICE EQUIPMENT	28
6-104 - Number of Consumer Services	28
6-112 - Support for the Attachment of Overhead Service Conductors	29
6-112(2)	29
6-112(4)	29
6-200 - Dual Lug Meter Sockets	29
6-200(1) - Single Breaker Service Equipment	29
6-206(1)(a) - Electric Service Requirements	29
6-206 - Service Equipment Location	29
6-206(1)(c) - Panels	29
6-206(3) - Service Disconnect	30
6-208 - Service Conductors Under House Trailer/Mobile Homes	30
6-300 - Underground Consumer's Services on New Housing	30

6-404 - Grounded Circuit Conductor (Neutral) in CT Cabinets	30
SECTION 8 - CIRCUIT LOADING AND DEMAND FACTORS	31
8-102 - Voltage Drop.....	31
8-104(3)(a) - Water Heaters.....	31
8-200 & 8-202 - Demand for Electric Vehicle Charging.....	32
Single Dwellings.....	32
Apartment and Similar Multifamily	32
8-304(1) - Number of “Unspecified Load” Receptacles on Branch Circuits	32
SECTION 10 - GROUNDING & BONDING	32
10-204, 10-624 & 10-1100 - Grounded Circuit Conductor (Neutral).....	32
277/480 and 347/600 Systems	32
Connecting NGR Equipment to the Utility Transformer	32
10-406(4) - Replacement of Furnaces.....	32
10-604 & 10-606 - Assuring Continuity at Service Equipment.....	33
10-624(4) - Bonding Splitters to Ground.....	33
10-700(2) - All Services Require One Ground Plate or Two Rods	33
10-706 - Lightning Protection	33
10-812 - Grounding Conductor Size for Alternating-Current Systems	33
Alternate Method for Grounding & Bonding	34
SECTION 12 - WIRING METHODS.....	37
12-010(3) - Wiring in Ducts and Plenums.....	37
12-012 - Burial of Conductors in Proximity to Gas Lines	37
12-012(11)(12) - Frost Sleeves and Marking Tape.....	37
12-120 - Supporting of Cables.....	38
12-120(1) - Horizontal.....	38
12-120(2)(4) - Vertical	38
12-1118 - Expansion of Rigid PVC Conduit	38
12-2200 - Clearance for the Installation of Cable Tray	39
12-2202 & 36-100(3) - Conductors of Different Voltages in Cable Tray	39
12-2250 - Cable Buss	39
12-3000(2)(3) – Continuity of Cables and Conduits Entering Non-Metallic Boxes.....	39
12-3000(9) - Box for Ceiling Fan	39
SECTION 14 - PROTECTION AND CONTROL	40
14-100(g) - Loading Cables on Farms and Acreages	40
14-104(1) - Adjustable Main Breakers	40
14-104(2) - Rating of Overcurrent Devices	40
SECTION 16 - CLASS 1 AND CLASS 2 CIRCUITS	40
16-008 - Hazardous Locations	40
SECTION 18 - HAZARDOUS LOCATIONS.....	40
18-006(c) - Ammonia Compressor Rooms.....	40
18-008(a) - Classification of Grain Handling Facilities.....	41
18-008 - Hazardous Area Classification - Grain Elevator	41
18-008 - Hazardous Area Classification - Main Floor Plan - Seed Cleaning Plant	42
18-008 - Hazardous Area Classification	43
18-008 - Bio Diesel, Canola Crushing Plants	44
18-010 - Woodworking Plants and Sawmills	44
18-052 - Marking of Equipment Class 1 Locations	45
18-108(3)(4)(5)(6) - Sealing Class 1, Zone 1	45
Cable Seals	45
18-154(3)(4)(5)(6)(7) - Sealing Class 1, Zone 2.....	45
Cable Seals	45

SECTION 20 - FLAMMABLE LIQUID AND GAS DISPENSING AND SERVICE STATIONS, GARAGES, BULK STORAGE PLANTS, FINISHING PROCESSES AND AIRCRAFT HANGARS	46
20-004 - Island Gas Pump	46
20-062 - Compressed Natural Gas Refuelling Stations, Compressors and Storage Facilities	46
20-100 - Commercial Garages	46
20-102 - Hazardous Area Commercial Garages	47
20-102(4) - Clarification of Pits or Depressions Below Floor Level	47
20-110(2) - Equipment Above the Hazardous Area	47
20-204 - Residential Garage	47
20-300 - Anhydrous Ammonia	47
20-400 - Finishing Processes	47
Applies to Areas	47
20-402 - Paint Mixing Rooms	48
DEFINITIONS AS PER NFPA 33	48
SECTION 22 - LOCATIONS IN WHICH CORROSIVE LIQUIDS, VAPOURS OR EXCESSIVE MOISTURE ARE LIKELY TO BE PRESENT	49
22-002 - Category 1 - Greenhouses, Freezers and Walk-In Coolers	49
22-200(1) - Car Wash	49
22-202 - Granular Fertilizer Storage	49
22-204 - Buildings Housing Livestock or Poultry	49
Wiring Methods	50
22-704 - Sewage Lift - Classification of Areas	50
Typical Sewage Lift Station (self-contained)	51
Building - Ordinary Location	51
SECTION 24 - PATIENT CARE AREAS.....	53
Definitions - Health Care Facilities	53
24-000 - Classification of Areas	53
24-102(6) - Receptacles or Equipment Not Part of Essential System	54
24-104 - Bonding to Ground	54
24-110 - Circuits in Intermediate and Critical Care Areas	54
CAN/CSA-Z32-Patient Care Environment (formally known as patient care location)	55
SECTION 26 - INSTALLATION OF ELECTRICAL EQUIPMENT	56
26-210 Capacitor Switching Devices	56
SINGLE PHASE TRANSFORMER FULL LOAD LINE CURRENT IN AMPERES	57
THREE PHASE TRANSFORMER FULL LOAD LINE CURRENT IN AMPERES	57
26-256 - 3 Phase Dry-Core Transformers	58
26-402(1) - Location of Panelboards	59
26-402(2) - Location of Panelboards	59
26-700(11) - Receptacles	59
26-702 - Receptacles Exposed to the Weather	59
26-704 - Receptacles for Maintenance of Equipment on Rooftops	59
26-710(a) - Finished Wall	60
26-710(n) - Outdoor Receptacles for Residential Occupancies	60
26-712(g)(h) & 26-700(12) - Tamper-Resistant Receptacles	60
26-712(d) - Kitchen Receptacles	60
26-714 & 26-724(a) - Receptacles for Single Dwellings	61
26-714(c) - Receptacles for Garage Door Operators	62
26-720(f) - T-Slot Receptacles	62
26-722(f)(h) - Arc Fault Protection for Sleeping Areas	62
26-722(g) - Sump Pumps	62
26-806(1)(5)(6)(7) - Gas Furnaces	62
SECTION 28 - MOTORS & GENERATORS	63
28-110(1) - Aeration Fans	63

SECTION 30 - INSTALLATION OF LIGHTING EQUIPMENT	63
30-100 - Farm Yard Lights	63
SECTION 32 - FIRE ALARMS AND FIRE PUMPS	63
32-102(1)(c) - Wiring Methods	63
32-110 - Smoke Alarms and Carbon Monoxide (CO) Detectors in Dwelling Units	64
Smoke Alarm Requirements	64
Location Requirements	64
Carbon Monoxide (CO) Alarm Requirements	64
Location Requirements	64
32-208 - Fire Pump Transfer Switch	65
SECTION 36 - HIGH VOLTAGE INSTALLATIONS.....	65
36-214(2) - Disconnecting Means	65
Minimum Distances from Exposed Energized High Voltage Electrical Conductors	65
SECTION 38 - LIFT FOR PERSONS WITH PHYSICAL DISABILITIES	66
38-061 - Outdoor Wheelchair Lifts	66
SECTION 46 - EMERGENCY SYSTEMS, UNIT EQUIPMENT AND EXIT SIGNS AND LIFE SAFETY SYSTEMS.....	66
46-108 - Wiring Methods	66
46-202 - Types of Emergency Power Supply	66
46-108(5), Figure 8, Appendix B.....	67
46-204 - Protection of Electrical Conductors	67
48-208(1) - Overcurrent Protection (Emergency Power Supply)	67
SECTION 50 - SOLAR PHOTOVOLTAIC (PV) SYSTEMS.....	68
50-004 - Marking of PV Output Disconnect.....	68
50-012 - Overcurrent Protection for Apparatus and Conductors	68
50-018 - Wiring Methods	68
50-020(2) - Single Conductor Attachment Plugs.....	68
50-026 - Grounding	68
SECTION 62 - FIXED ELECTRICAL SPACE AND SURFACE HEATING SYSTEMS.....	69
62-114 - Overcurrent Protection	69
62-116 - Demand Factors for Service Conductors and Feeders	70
62-202 - Location for Temperature Control	70
62-208(3)(4)(5) - Installation of Central Units	70
62-226 - Infrared Radiant Heaters of the Metal Sheath-Glowing Element Type	70
SECTION 64 - RENEWABLE ENERGY SYSTEMS.....	71
64-006 - Conductors of Different Systems	71
64-010(3)(4) - Overcurrent Protection.....	71
64-012(1)(2)(3)(4)(5)(6) - Disconnecting Means	71
64-014 - Wiring Methods	72
64-020(1)(2) - Grounding	72
64-024 - Marking.....	74
64-026(2) - Warning Notice and Diagram.....	74
64-030 - Interconnected System Connection	74
64-102 - Max Circuit Loading Inverters.....	74
64-114 - Utility-Interactive Point of Connection.....	75
Non-Dwelling Units	75
Dwelling Units.....	76
SECTION 68 - POOLS, TUBS AND SPAS.....	80
68-054 - Utility Conductors Over Pools	80

68-068(7)(b) - Ground Fault Circuit Interrupters	80
68-308 - Other Electrical Equipment.....	80
SECTION 72 - MOBILE HOME AND RECREATIONAL VEHICLE PARKS	80
72-102(2) - Demand Factors for Service and Feeders	80
SECTION 76 - TEMPORARY WIRING	80
76-004 - Grounding and Bonding.....	80
76-006 - Service Entrance Equipment	81
76-016 - Receptacles.....	81
SECTION 80 - CATHODIC PROTECTION	81
80-008 - Branch Circuit	81
80-010 - Disconnecting Means	81
SECTION 84 - INTERCONNECTION OF ELECTRIC POWER PRODUCTION SOURCES.....	82
84-000 - Portable Generators	82
SECTION 86 - ELECTRIC VEHICLE CHARGING.....	85
86-300 - Branch Circuits	85
ELECTRICAL INSPECTIONS PHONE LISTING	86

Website Information

www.saskpower.com now contains the following information:

2012 Interpretations and Information

District Inspector Contact Numbers

District Inspector Territory Maps

Electrical Fee Schedule

Code for Electrical Installations at Oil & Gas Facilities

Link to Electrical Act and Regulations

Electric Service Requirements

Approved Field Inspection Agencies and Certification Bodies

Generator Brochure

Wind & Solar Information

Bond Notice Administration Fees

When defects are due, a bond notice will be issued and a \$125.00 administration fee as per Table 4 of the Electric Fee schedule, will be assessed. The invoice will be issued to the contractor at the same time the bond notice is issued to the applicable bond company for completion of said defect.

SECTION 2 - GENERAL RULES**2-004 - Permit****Permit Information**

It is the responsibility of the contractor to ensure that the information given on the permit application is accurate and complete. Inaccurate details may result in delayed service connects. In an effort to make the permit process more efficient, please follow these simple rules:

1. If a utility connection or reconnection is required, mark the appropriate **YES** box on the permit.
2. If there is no action required by the utility staff, mark the **NO** box.
3. **Ensure the address where the work was performed is accurate and complete.** Additional information is required where no civic address is available (i.e. beaches, new subdivisions, oilfield lease sites and Indian reserves).

4. Supply work/cell contact phone number in the work description. **Failure to provide accurate and legible information on any permit application could result in the following:**
- a. a **\$125.00** assessment fee may be charged to locate missing or inaccurate information; or
 - b. the application and payment may be returned to the contractor to update missing or inaccurate information. A fine for unreported work as per *The Electrical Inspection Regulations* may be assessed for any work that is not authorized by a valid permit.

Section 16 of *The Electrical Inspection Act, 1993* and Section 7 of *The Electrical Inspection Regulations* specifies that **all permit applications must be accompanied by the appropriate permit fee.**

Internet Permit Entry

Contractors are reminded that they have the option of entering permits online via the Internet permit entry system.

Some of the advantages are:

- Preauthorized debit withdrawal; no cheques to issue;
- Automatic fee calculation;
- No need to leave office to deliver permits; and
- Online permit entry available daily from 7 AM to 11 PM.

To receive more information or to see a demo, call toll-free 1-888-757-6937,
Monday to Friday, 8:00 AM to 12:00 PM; 1:00 PM to 4:30 PM

Permits for Low Voltage and Extra Low Voltage Installations

All low voltage and extra low voltage installations including lighting, process controls, solar powered systems, cathodic protection and SCADA systems require permits. *The Electrical Inspections Regulations* (available at the Queen's Printer) have been amended to exempt the requirement of an Electrical Permit for the installation of communication cabling for the following:

6.1(1) In this section:

“code” means the latest prescribed edition of the Canadian Electrical Code within the meaning of subsection 5(2) of the Act;

“communication system” means a communication system as defined in Section 0 of the code;

“control circuit” means a control circuit as defined in Section 0 of the code;

“hazardous location” means a location to which Section 18 of the code applies;

“patient care area” means an area to which Section 24 of the code applies.

6.1(2)

Subsection 16(2) of the Act does not apply to the following types of work of electrical installation:

- a. the replacement of switches, receptacles, ballasts, lighting fixtures or motors in single-family dwelling units and in non-detached dwelling units with separate entrances that are intended for the use of one family; and
- b. the installation of a communication system, other than a communication system:
 - that is located in a hazardous location
 - that is located in a patient care area; or
 - in which control circuits operate the electrical equipment.

Note: the exception under “b” applies to security systems.

Permits for Oil Field Installations

All low voltage and extra low voltage installations including lighting, process controls, solar powered systems and SCADA systems require permits.

2-012 - Inspection Request Required

Two (2) weeks notice is required for an inspection for the following installations to be approved before concealment, operation and/or utility connection:

- a. electrical service 600 amps or larger;
- b. medical facilities that contain patient care areas;
- c. high voltage installations, including grounding;
- d. renewable energy production such as solar and wind;
- e. buildings housing livestock or poultry;
- f. high voltage neon signs and outline lighting; and
- g. sewage lift and treatment plants.

2-014 - Plans and Specifications

1. One set of construction electrical plans and specifications, as required by Section 19 of *The Electrical Inspections Act, 1993* or as requested by the Electrical Inspections department, shall be submitted to the Electrical Inspections department **prior to construction** for:
 - a. wiring installations of public buildings, industrial establishments, factories and other buildings in which public safety is involved;
 - b. large light and power installations and the installation of apparatus such as generators, transformers, switch boards or large storage batteries;
 - c. wiring installations where ampacity exceeds 400 amps or voltages exceed 300 volts phase to phase;
 - d. oil field facilities that have an ampacity greater than 200 amp;
 - e. wind and solar installations 5 KW and greater;

- f. installations covered by Sections 18, 20, 24 (Class A, B & C- health care facilities as indicated by Z32-09. See page [53](#) for definitions) or 36 of the Canadian Electrical Code; oil and gas facilities (excluding single well sites), sewage treatment facilities and mining facilities; and
 - g. any other installation as deemed necessary by the Electrical Inspections department.
2. Submit plans for review to:
- SaskPower**
Gas & Electrical Inspection Division
#177-1621 Albert Street
Regina, SK S4P 0S1
- Telephone: 1-888-757-6937**
Fax: 1-306-566-2906
3. Submissions shall include the following information:
- Consultant/contractor contact information: company name, mailing address, phone number, e-mail address.
 - Provide project name, construction site address and/or land location.
 - Where an emergency generator is installed to supply power to life safety systems, a selective coordination report (as per 46-208) will be required and shall be submitted to Electrical Inspections.
 - Specify hazardous area classifications.
 - Clearly identify existing, new and future part of the project.
 - Electrical plans:
 - (a) for **low voltage** (750V or less) installations, submission shall include the following:
 - Calculated loads
 - Site plan
 - An overall one-line diagram:
 - main service ampacity, voltage and phase
 - main and feeder conductor sizes including installation method i.e. underground (e.g. Diagram B4-1; Table D8B), conduit, free air, bundled or raceway
 - panel schedules indicating ampacity and voltage rating
 - breaker/fuse size
 - conductor material (copper or aluminum)
 - maximum short circuit current available at each point of application of protection devices in installations exceeding 600 Amps
 - Cable schedule
 - Cable buss
 - Plan view of the electrical equipment layout
 - Voltage drop calculation for feeder and branch circuits or cable/conductor distances
- Note:** Unless requested by the submitter, only those plans with the main service of 600 amps or 300 volts and above will have a written report prepared and returned.

- b) For **high voltage** (over 750 V) installations, plans with the following information shall be submitted and a report must be obtained from Electrical Inspections before a service connection is authorized:
- An overall one-line diagram:
 - main service ampacity, voltage and phase
 - all voltages of proposed installation
 - main and feeder conductor sizes including installation method i.e. underground (e.g. Diagram B4-1; Table D8B), conduit, free air, bundled or raceway
 - panel schedules indicating ampacity and voltage rating
 - breaker/fuse size
 - conductor material (copper or aluminum)
 - maximum short circuit current available at each point of application of protection devices in installations exceeding 600 amps
 - transformer capacity
 - primary and secondary protective switching devices
 - Cable schedule
 - Cable buss
 - Site Plan
 - Electrical arrangement complete with:
 - plan, elevation, profile views and physical arrangement of the electrical equipment
 - dimensions to clearly indicate the electrical, physical and work clearances and relative locations of the equipment
 - fencing arrangement
 - grounding details
 - GPR study
 - provisions for metering equipment
 - copy of the electrical specifications
 - Other design documents as prescribed by Electrical Inspections.
4. Plans review fees as described in the Electrical Fee Schedule will be charged. Please visit our website at www.saskpower.com.

- NOTE:**
1. Where plans have not been submitted, electrical service may be denied until such time as plans have been received and reviewed by Electrical Inspections.
 2. Plan submissions will be entered in the queue and reviewed in the order they are received.
 3. Plans submitted with any of the above information missing will be moved back in the queue.
 4. For low voltage plans, allow approximately four (4) weeks for review turn around time. For high voltage plans, the review period is approximately six (6) weeks. The review timeline is subject to the number of plans received.

2-022 - Renovations of Existing Installations

Connection or Reconnection

Where a permit is required for an electrical service change or for a reconnection of a service which has been disconnected for more than twelve (12) months, the service shall be made to comply with the requirements of the current Canadian Electrical Code. **Wooden masts will no longer be connected when a permit is required.**

Plans and a preinspection may also be required in accordance with [2-012](#) and [2-014](#).

Flood Procedures

When restoring power to a flood damaged premise, there are several conditions to be aware of and processes to comply with. **An Electrical Contractor must make the electrical system safe to be reconnected. A permit must be submitted and a SaskPower Electrical Inspector must be notified before reconnection.** All work must meet the requirements of the current Canadian Electrical Code. When electrical equipment is exposed to water, corrosion is enhanced rapidly. The equipment may look safe on the outside, but it can be extremely dangerous to reuse.

1. Circuits and equipment that were subjected to the flood must be disconnected and isolated before power can be restored.
2. If the service (panel box, etc.) has been exposed to water, it must be replaced or completely disassembled and cleaned. All the breakers must be replaced and the damaged breakers must be destroyed. When service equipment is replaced, the entire service must be brought up to current Canadian Electrical Code.
3. All meter sockets must be securely mounted.
4. Grounding must be checked and if repairs are required, they must meet the requirements of the current Canadian Electrical Code. Ground clamps should be cleaned or replaced.
5. All submerged conductors, cable, equipment, receptacles, switches, etc. must be replaced and the damaged material destroyed.
6. Conduit systems that have been flooded shall be cleaned as good as possible and a bond wire will have to be installed with the new conductors.
7. Furnaces and water heaters must be checked over by a qualified Gas Contractor.

Electrical Systems Exposed to Fire

When a building has had a fire and the panel has been exposed to smoke and or water, all of the breakers must be replaced and the old ones destroyed. If the panel has not been damaged by heat etc., it may be thoroughly cleaned and reused. All receptacles, switches, lighting and heating fixtures that have been exposed to the smoke and/or water must be replaced and the old ones destroyed. Any wiring that may have been exposed to flames or heat in excess of its maximum temperature rating must be replaced.

2-024 - Use of Approved Equipment

Labels Required for Manufactured Homes

Manufactured homes (Ready to Move homes) shall have a label affixed to the electrical panel or the inside of the kitchen cabinet. The label shall include the Saskatchewan Electrical Contractor's name, the permit number that was issued for the installation and the date. If you require labels, please contact your local electrical inspector to make arrangements.

Cable Ties

The Canadian Electrical Code mandates the use of approved straps or other devices to support cables and raceways. However, cable ties used for securing need not be approved. "Securing" should not be confused with "support". For example, a cable in a horizontal cable tray is supported by the cable tray and may be secured to the tray with cable ties. In the case of a vertical cable tray, the cable must be supported by an APPROVED clamp or fastener with the exception of short drops of 1.5 meters or less.














Equipment Approval Certification



















All electrical equipment requires an overall approval from a Saskatchewan recognized Certification Body prior to being connected or reconnected electrically. This includes Mobile Homes, Ready to Move Homes, as well as any other manufactured product (new or used). For a complete list of approved Certification Bodies and certification marks, please visit us on the website at www.saskpower.com.












Field Inspection Certification

For a list of field recognized certification labels for the Province of Saskatchewan at the time, contact SaskPower Electrical Inspections at our Toll-Free number 1-888-757-6937, or online at www.saskpower.com.

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Name of Field Inspection Agency	Special Inspection Label All labels must read: "CSA SPE-1000"	Name of Field Inspection Agency	Special Inspection Label All labels must read: "CSA SPE-1000"
CSA International		QPS	
ETL Intertek Entela		INTERTEK TESTING SERVICES	
ETL Intertek Semko		Quality Auditing Institute	
TÜV America Inc.		TÜV Rheinland of North America, Inc.	
Underwriters Laboratories of Canada		Nemko Canada Inc.	
ELECTRICAL SAFETY AUTHORITY – ESAF	 Above Label for use on all electrical equipment covered by the accreditation  For use on panels only	LabTest Certification	

Name of Certification Body	Certification Marks	
CSA International		The CSA certification mark alone without any identifier indicates products approved to Canadian National Standards. If another country's identifier is present (i.e., US, NRTL), then the small 'c' Canadian identifier is required to indicate that the product also complies with Canadian National Standards.
	 	
	 	The 'Blue Flame' certification mark is a Canada only mark indicating compliance to Canadian National Standards. They do not require a small 'c' Canadian identifier.
QPS Evaluation Services Inc.	 	The QPS certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
Intertek Testing Services NA Ltd. (ETL) (Eutela)	 	The ETL Intertek Entela certification mark requires the small 'c' Canadian identifier at the 8 o'clock position to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required. ETL Intertek Semko has 2 certification marks, the ETL mark and the WH mark. Each mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
	 	
	 	
FM Approvals	 	The FM certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
Met Laboratories		The MET certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
Quality Auditing Institute		The QAI certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
TÜV Product Service		The TÜV Product Service certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.

Name of Certification Body	Certification Marks	
TÜV Rheinland of North America		The TÜV Rheinland certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
Underwriters' Laboratories		The UL certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
		
		The ULC certification mark is a Canada only mark indicating compliance to Canadian National Standards. It does not require a small 'c' Canadian identifier.
Curtis - Straus LLC		The ULC certification mark is a Canada only mark indicating compliance to Canadian National Standards. It does not require a small 'c' Canadian identifier.
		The Curtis - Straus LLC certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
NSF International		The NSF International certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
Nemko Canada Inc.		The Nemko Canada Inc. certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
Nemko CCL Inc.		The Nemko CCL Inc. certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
OMNI Environmental Services Inc.**		The OMNI Environmental Services Inc. certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.
LabTest Certification Inc.		The Lab Test certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.

Name of Certification Body	Certification Marks	
ENEFEN Energy Efficiency Engineering Ltd.		The ENEFEN certification mark is a Canada only mark indicating compliance to Canadian National Standards. It does not require a small 'c' Canadian identifier.
SGS NORTH AMERICA, INC.		The SGS North America Inc. certification mark requires the small 'c' Canadian identifier to indicate compliance to Canadian National Standards. Identifiers for other countries may be present but in all cases, the small 'c' is required.

CERTIFICATION BODY		SPECIAL/FIELD INSPECTION AGENCIES
CSA (Canadian Standards Association) 1707 94th Street NW Edmonton, Alberta T6N 1E6 Canada	General Queries - 780 450-2111 Standard Sales & Seminars - (780) 490-2007 1-800-463-6727 Fax: (780) 490-2059 E-mail: info@csagroup.org Web Site: http://www.csa.ca	Dora Vendrig Field Service Representative, Special Inspections Saskatoon, SK Office Phone # (306) 249 3448 Cell Phone # (306) 301 0049 dora.vendrig@csagroup.org Jeff Tuttle Field Service Representative, Factory Inspections Saskatoon, SK Office Phone # (306) 384 3020 Cell Phone # (306) 716 2306 jeff.tuttle@csagroup.org
CSA International 178 Rexdale Boulevard TORONTO, ON M9W 1R3 Canada	Mr. Walter Vance, Manager Accreditations and Conformity Assessment (216) 524-4990 Fax: (216) 328-8138 E-mail: walter.vance@csa-international.org Web site: http://www.csa-international.org/	See link for applicable marks: http://www.csa-international.org/product_areas/hazloc equip/special services/field certification/
QPS Evaluation Services Winnipeg, Manitoba Canada	Gerry Dynda Mobile: (204) 632-4509 Fax: (204) 632-4386 1-888-819-9248 Web Site: http://www.qps.ca E-mail: info@qps.ca	Performs field inspections
Intertek Testing Services NA Ltd. (ETL) 1500 Brigantine Drive Coquitlam, BC V3K 7C1	Inspections Group Inc. 12010 - 111 Ave. Edmonton, Alberta T5G 0E6 Phone: (780) 454-5048 Fax: (780) 454-5222 Toll-Free: (866) 554-5048 Toll-Free Fax: (866) 454-5222 E-mail: questions@inspectionsgroup.com	Jason Short Saskatoon, SK Mobile: (306) 229-7594 1-800-668-8378 Web Site: http://www.intertek.com E-mail: inspections@intertek.com
FM Approvals 1151 Boston-Providence Turnpike P.O. Box 9102 NORWOOD, MA 02062 USA	Mr. J. Hill Group Manager, Technical Auditing Services Ph: 781 - 255-4972 Fax: 781 - 762-9375 E-mail: john.hill@fmglobal.com Web Site: http://www.fmglobal.com	

CERTIFICATION BODY		SPECIAL/FIELD INSPECTION AGENCIES
MET Laboratories, Inc. 914 West Patapsco Avenue BALTIMORE, MD 21230-3432 USA	Mr. R. Frier, President Ph: (410) 354-3300 ~ Fax: (410) 354-3313 E-Mail: rfrier@metlabs.com Web site: http://www.metlabs.com	
Quality Auditing Institute 2825 Murray Street PORT MOODY, BC V3H 1X3 Canada	Mr. S. Harris, Manager Ph: (604) 461-8378 ~ Fax: (604) 461-8377 E-Mail: sharris@qai.org E-Mail: info@qai.org Web Site: http://www.qai.org	Testing Tech Saskatoon, SK 1-306-664-2415 E-mail: inspections@testing-tech.com
TÜV Product Service, a division of TÜV America Inc. 5 Cherry Hill Drive DANVERS, MA 01923 USA	Mr. G. Minka, Director Certification Body Ph: (978) 739-7000 ~ Fax: (978) 777-8441 E-Mail: gminka@tuvam.com Web Site: www.tuvamerica.com	Performs field inspections.
TUV Rheinland of North America, Inc. 12 Commerce Road NEWTOWN, CT 06470 USA	Mr. T. R. Calland, P.E., Program Manager Product Safety and Quality International Approvals Ph: (203) 426-0888 ~ Fax: (203) 426-4009 E-Mail: tcalland@us.tuv.com Web Site: http://www.us.tuv.com	
Underwriters' Laboratories of Canada 7 Underwriters Road TORONTO, ON M1R 3B4 Canada	Mr. Günsimar Paintal Regional Quality Manager & UL Mark Program Owner Ph: (416) 757-5250 Fax: (416) 757-1781 E-Mail: gunsimarbir.paintal@ca.ul.com Web Site: http://www.ulc.ca	Mr. Andrew Saunders CAS Manager & IB Program Owner Ph: (416) 757-5250 Fax: (416) 757-1781 E-Mail: andrew.saunders@ca.ul.com Web Site: http://www.ulc.ca
CURTIS-STRAUS LLC 527 Great Road Littleton, MA 01460 U.S.A.	Mr. Jon D. Curtis, P.E. Director of Operations Ph: (978) 486-8880 Fax: (978) 486-3529 E-mail: jcurtis@curtis-strauss.com Web Site: http://www.curtis-strauss.com	
NSF INTERNATIONAL 789 Dixboro Road Ann Arbor, MI 48105	Mr. Craig S. Morr, CEI/CEM Quality Assurance & Organization Safety Manager Ph: (734) 769-5143 Telefax: (734) 827-6849 E-mail: information@nsf-isr.org	

CERTIFICATION BODY		SPECIAL/FIELD INSPECTION AGENCIES
Nemko Canada Inc 303 River Road, Ottawa Ontario, Canada K1V 1H2	Mr. Stuart Beck Director of Certification Ph: (613) 737-9680, ex. 246 Fax: (613) 737-9691 E-mail: stuart.beck@nemko.com Web Site: http://www.nemko.com	Performs field inspections
Nemko CCL Inc. 1940 West Alexander St. Salt Lake City, Utah 84119-2039 USA	Thomas C. Jackson General Manager Tel: 1-801-972-6146 e-mail: tom.jackson@nemko.com	
OMNI-Test Laboratories, Inc. 5465 SW Western Avenue Suite G Post Office Box 743 Beaverton, OR 97075 USA	Ms. Alana Smith Accreditation Manager Ph: (503) 643-3788 Fax: (503) 643-3799 E-mail: asmith@omni-test.com Web Site: http://www.omni-test.com	
ELECTRICAL SAFETY AUTHORITY (ESAFE) 1 Terrance Matthews Cres., Suite 130 Ottawa Ontario, Canada, K2M 2G3	Mike Moore General Manger Field Evaluation Services Tel: (613) 271-1489 x 4317 or 1-800-559-5356 Fax: (613) 283-7638 Email: http://www.esinspection.net	Performs field inspections
LabTest Certification Inc. 3133 - 20800 Westminster Highway RICHMOND, BC V6V 2W3	Toll Free: 1-877-247-0494 Local: 604-247-0444 Web Site: www.labtestcert.com Email: info@labtestcert.com	
ENEFEN Energy Efficiency Engineering Ltd. 9865 West Saanich Road, Suite 213, North Saanich, BC, V8L 5Y8, Canada	Jozef Jachniak, P. Eng, President Telephone: 306-205-1454 Fax: 1-866-583-0520 E-mail: jjachniak@enefen.com	Performs field inspections
SGS NORTH AMERICA, INC. 291 Fairfield Avenue, Fairfield, NJ 07004 U.S.A	Telephone: (973) 575-5252 Fax: (973) 575-7175 Email: Russell.Nichols@sgs.com	

2-024 - Use of Approved Equipment - Exceptions

All electrical equipment will be approved under the definition of approved with exception to the following:

- Voltage not more than 30V;
- Power not more than 100VA;
- It is not a lighting equipment (fixture); and
- It is not an equipment to be used in a hazardous location.

2-030 - Deviation or Postponement

Requests for special permission shall be made in writing to the Chief Electrical Inspector, giving all details pertaining to the requests. If acceptable, permission applying to the particular installation will be confirmed in writing.

2-035 - Oil and Gas Field Installations

Installations for oil and gas fields shall comply with the Safety Codes Council code entitled *Code for Electrical Installations at Oil and Gas Facilities, Third Edition, 2006*, as published and distributed by SaskPower. It is available on our website at www.saskpower.com.

2-102 - Rebuilt Equipment

Retrofit kits and installation requirements

With the application of energy efficiency programs in Saskatchewan, high efficiency lighting technologies and various lighting retrofit kits are popular. There are several options for retrofitting standard **tubular fluorescent luminaries**, with more energy efficient lamps.

The existing program that is in place where fluorescent luminaries that are suitable for T12 lamps are modified to accept T8 or T5 lamps are as follows:

- Luminaries that have modifications done to the reflectors or lamp holders shall be recertified and labeled by an accredited certification organization.
- The retrofit of luminaries may be accepted under the original certification when the following conditions apply:
 - the work is covered by an electrical permit;
 - the replacement equipment bears the mark of a recognized certification agency;
 - the replacement equipment is rated for the application and draws no more power than the original equipment; and
 - the replacement equipment is physically compatible with the luminaire with no modifications.

- Please note that in all cases, each retrofitted luminaire must be provided with a label containing the following information:
 - voltage;
 - amperage;
 - date of install;
 - installed by (contractor name); and
 - permit number.

Some retrofit options are:

- **Fluorescent retrofit kit** – consists of fluorescent tube and electronic ballast that is an integral part of the device.
- **LED retrofit kit** – consists of a LED retrofit tube and the LED driver components that are remote from (not an integral part of) the device.
- **LED retrofit kit with integral driver** – consists of a LED tube and the LED driver components that are an integral part of the device.

Retrofit kits specified above require a luminaire conversion and usually involve replacing the lamp, rewiring the luminaire and in some cases, replacing an existing ballast with an LED driver, or directly connecting the lamp to the supply circuit.

Although there are differences in installation of various retrofit kits, for all of them it is very important to consider the following requirements:

- disconnect the fluorescent luminaire from the power source before starting the retrofit installation;
- the retrofit kits are certified as assemblies to appropriate Canadian standard(s);
 - **Note:** for LED retrofits where LED driver is an integral part of the lamp, retrofit kits approved to UL standard, UL 1598C Outline of investigation will be used until the CSA standard C22.2 No. 1993 *Self-Ballasted Lamps and Lamp Adapters* is updated to include certification requirements for LED retrofits.
- the retrofit kits are required to be marked:
 - **Note:** In accordance with standards, some examples of markings required on the retrofitted luminaires with LED lamps are:
 - **USE ONLY WITH [Manufacturer] [Catalogue Number] LUMINAIRE**, as applicable
 - **REPLACE ONLY WITH [Manufacturer] [Catalogue Number] XXX**
XXX is replaced with: LED Lamp or LED driver, as applicable
- the retrofit kits are installed in accordance with manufacturer's wiring installation instruction.

2-200 - Protection of Equipment

Commercial Automobile Receptacles

Receptacles shall be installed with mechanical protection to prevent damage by vehicles by one of the following or other equivalent means:

- a. Approved manufactured pedestals provided with mechanical protection; or
- b. Where mechanical protection is not utilized, the receptacles and conduit shall be installed on structures of adequate strength, such as fences or walls and the receptacles and conduit shall be installed no less than 750 mm above finished grade; or
- c. A reinforced concrete post with a dimension of not less than 300 mm may be used, and shall be installed to a height of not less than 750 mm and a depth of not less than 750 mm. The receptacles and conduit shall be installed on the face of the post not exposed to vehicular damage. The receptacles may, if desired, be installed on the face of the post exposed to vehicles provided the conduit and outlet box are installed within the post. Mounting height of the receptacles shall not be less than 750 mm above finished grade. As an alternate to the concrete post, a treated wooden post of minimum 150 mm x 150 mm may be used.
- d. Permanently installed curb stops or bollards, when placed in front of the receptacles to prevent vehicles from coming in contact with receptacles, will be accepted as mechanical protection.

Conductors for wiring of these receptacles shall have insulation or covering suitable for installation and use at temperatures down to minus 40 degrees C except for conductors approved for and installed underground.

A separate bonding conductor is required in metal raceway as per 10-804.

2-306 - Shock and Flash Protection

Contractors are required to field mark equipment requiring adjustment, examination, servicing or maintenance while energized with a warning label identifying potential electric shock and arc flash hazard. This applies to all new equipment as well as used equipment that is being returned to service. See Appendix B for labeling requirements.

SECTION 4 - CONDUCTORS

4-004 & 4-006 - Application of New Changes to Conductor Sizing

Application Examples

Examples 1 to 3 below illustrate the permission to apply correction factors to the ampacity for the temperature rating of the conductor (90°C). In order to evaluate the termination rating of a breaker and compliance with Rule 4-006, it is necessary to compare the conductor ampacity at 75°C with the corrected ampacity.

Example 1

Find correct conductor size:

- 400 amp, 3 pole breaker, 120/208V for a 400A circuit
- T90 copper, 2 cables per phase in conduit
- Breaker terminations are marked at 75 degrees
- Continuous load

- Determine the correction factor:
Based on Rule 4-004 and Table 5C, for 6 conductors – **0.8**;
- Determine the ampacity of 250 kcmil copper conductor, 90°C rated:
From Table 2, 90°C column – 290A x 2 = **580A**;
- Determine the corrected ampacity – $580 \times 0.8 = \mathbf{464A}$
- Evaluate the termination rating. To comply with Rule 4-006, compare the conductor ampacity at 75°C with the corrected ampacity
- The corrected ampacity of 250 kcmil conductor is **464A**
- For 250 kcmil conductor, the 75°C Column of Table 2 ampacity equals 408 A ($255 \times .8 \times 2$) which is less than 75°C ampacity of the conductor (464A).

The installation is Code compliant based on Rule 4-006 requirements for termination temperature and Rule 14-104 requirements for the overcurrent device rating.

Example 2

Find correct conductor size:

- 200 amp, 3 pole breaker, 120/208V
- 4 single conductor – RA90, aluminum installed in a room with ambient temperature of 40°C
- Breaker terminations marked at 75 degrees
- Continuous load

- Determine the temperature correction factor (room with 40°C)
From Table 5A, for 90°C conductors, **0.91**
- Determine the ampacity of #3/0, RA90, 90°C rated:
from Table 3 - 90°C column – **270A rated**
- Determine the corrected ampacity: $270 \text{ A} \times 0.91 = \mathbf{246A}$
- Evaluate the termination rating. To comply with Rule 4-006, compare the conductor ampacity at 75°C with the corrected ampacity.
- The corrected ampacity of #3/0 AWG is 218 A (240×0.91)
- For #3/0 AWG conductor, the 75°C Column of Table 3 ampacity is 218A, which is less than 246A.

Example 3

Find correct conductor size:

- 800 Amp, 120/208 Volt underground service;
 - Parallel runs of RW90 copper – 2 cables per phase, installed in underground raceways.
 - Main Breaker Rated at 80% (not marked)
 - Main Breaker terminations are marked at 75 degrees
 - Continuous Load
- Using Diagram B4-4 and Table D14B, detail 2, selecting cable size **600 kcmil copper** is good for **423 Amps**.

For the 75 degree rating on the breaker termination, the D table ratings will be allowed. The requirements of Rule 4-006 will be satisfied if the cable ampacity from the D table is used and no further de-rating is necessary or required. For information, the Canadian Electrical Code overlooked updating the D tables to include a 75 degree column; future editions should include the change.

- 600 kcmil copper with a rating of 423 Amps from Table D14B, detail 2
- Table 1 says 600 kcmil on the 75 Degree column is good for 690 Amps

The 423A in Table D14B, detail 2 is lesser and is acceptable for breaker terminations.

4-006 - Termination Temperature Limitations

Where a conductor is terminated on a breaker or fusible switch with a 60°C or 75°C rating, the maximum conductor ampacity shall be based on the 60°C or 75°C column of Tables 1, 2, 3 or 4.

Where a conductor is terminated on equipment (i.e. meter socket or splitter) that is not rated, then the 90°C column of Table 1, 2, 3 or 4 may be used.



"60/75 °C Wire –
125 Amp & Lower Only"



"Use 75 Degrees C
conductors"



"Use 90 Degrees
C when not listed"

Ratings for Common Residential Services

Minimum permitted size for 3-wire 120/240 V and 120/208 V service conductors for single dwellings, or feeder conductors supplying single dwelling units of row housing or apartment and similar buildings and terminating on equipment having a conductor termination temperature of not less than 75°C

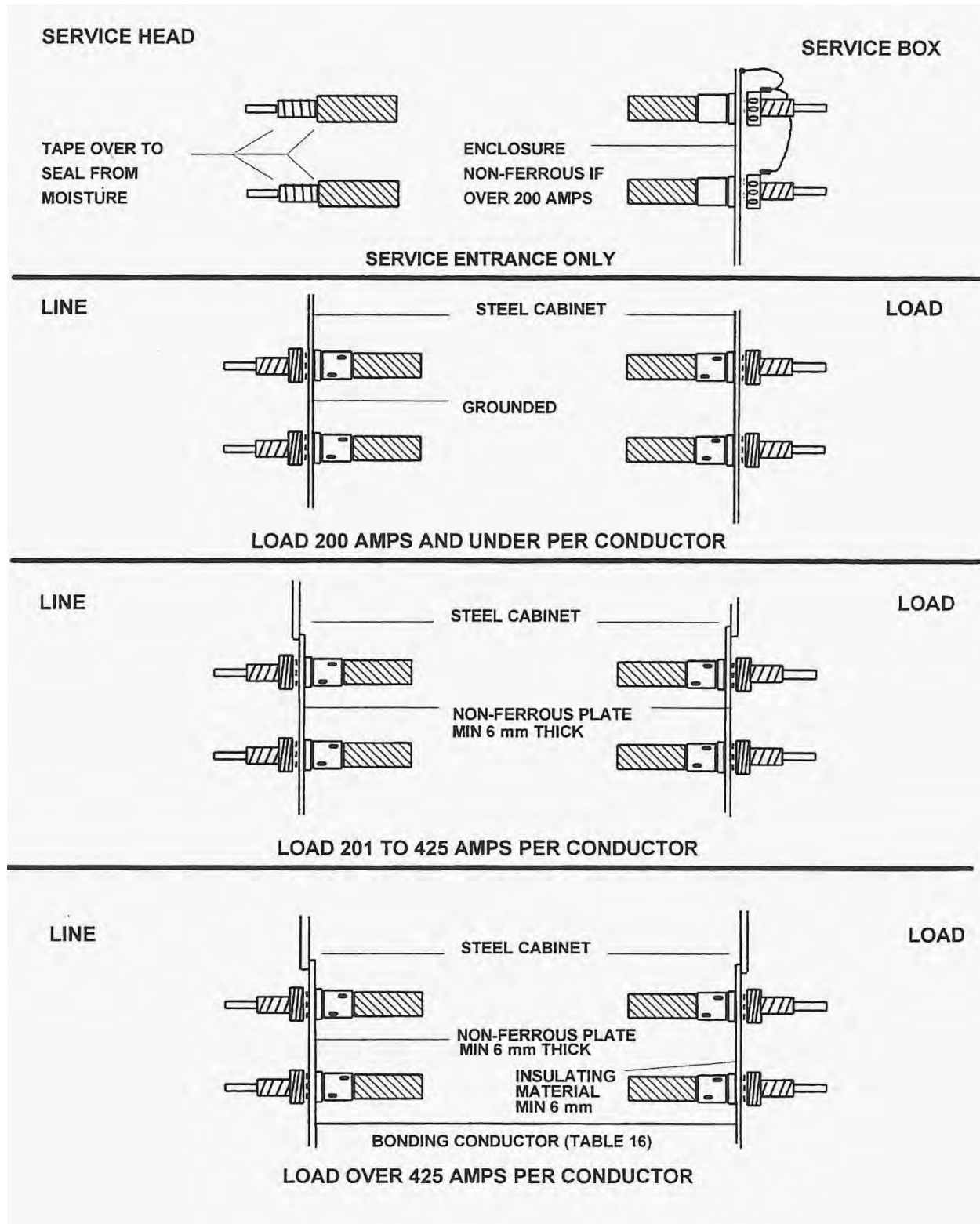
Service or Feeder Rating (A)	Size (AWG or kcmil)	
	Copper	Aluminum
60	6	6
100	3	2
200	2/0	4/0

Notes:

- (1) This Table applies only to conductors, sized in accordance with Rules 8-200(1), 8-200(2) and 8-202(1).
- (2) The 5% adjustment of Rule 8-106(1) cannot be applied to these values.
- (3) **See Rule 14-104(2) for overcurrent protection limitations for small conductors. See page [40](#).**

4-010 - Induced Voltages and Currents in Metal Armour or Sheaths of Single Conductor Cables

See Rule 4-010 and Appendix B.



4-024 - Harmonics - Sizing Neutral Conductors

Although the Canadian Electrical Code, Part I does not specifically mention harmonics, harmonics cause heating in the *neutral conductor*. Harmonics caused by certain types of non-linear loads (e.g. office computers, printers, variable speed motor drives, or certain types of electric discharge lighting) should be taken into consideration when sizing *neutral conductors*.

4-038(3) - Colour Coding of Conductors

Colour coding of branch circuit conductors and service conductors are not a mandatory requirement. This rule states that where colour coding is required, the colours shall be red, black and blue. The SaskPower Electric Service Requirements, Clause 3.6.1(b) states that where termination is made by SaskPower such as splitter box or CT metering, conductors must be colour coded. If CT metering is used after the main disconnect, then colour coding must be used to that point.

4-042 - DLO Cable

Sizes 1/0 or larger are permitted to be used in permanent installations in cable tray, provided the cable is:

- approved and marked as type TC cable;
- conforms to conditions for use for type TC cable;
- terminates in connectors specifically approved; and
- ampacity rating from Table 12E.

SECTION 6 - SERVICES AND SERVICE EQUIPMENT

6-104 - Number of Consumer Services

The maximum number of consumer services from a single supply service is four. Where more than four meters are required, the contractor must make arrangements with the utility and **meet their requirements**.

The following options may be allowed:

1. The utility will run two services to the same location on a building. The Electrical Contractor can install two splitters with a maximum of four meter sockets from each splitter; providing a maximum of eight meters on a building. Splitter sizes may vary.
2. The utility will run one service to each end of a building. The Electrical Contractor can install one splitter on each end and four meter sockets; providing a maximum of eight meters on a building. Splitter sizes may vary.
3. Install an approved meter electrical room.

Note: If the two services are permitted, then they will require a label stating that there are two services and the location of each.

6-112 - Support for the Attachment of Overhead Service Conductors**6-112(2)**

For the purpose of this rule ‘ground normally accessible to pedestrians’ includes patios and decks.

6-112(4)

Appendix B note to Rule 6-112(4) states an acceptable manner for mast support is one where three (3) support clamps are used. Of these, the upper most is required to be a complete through bolt assembly consisting of a minimum 12 mm bolt, nut and washer.

6-200 - Dual Lug Meter Sockets

200A and 400A dual lug meter sockets may be installed where a customer wants two consumer services. The subdivision of the consumer services can be accomplished within the dual lug meter socket provided that the total current rating of the two consumer service disconnects does not exceed the ampere rating of the meter socket.

In rural areas where the 400A self-contained meter socket is used, a service rated disconnect(s) is required immediately after the meter socket.

e.g. 1-400A or 2-200A disconnects, etc.

6-200(1) - Single Breaker Service Equipment

Each consumer’s service shall be provided with a single service box, except where a panelboard can employ no more than two single-pole breakers, one two-pole breaker, or one three-pole breaker and is service entrance rated.

6-206(1)(a) - Electric Service Requirements

- SaskPower’s Electric Service Requirements can be found online at www.saskpower.com or call SaskPower at 1-888-757-6937.
- City of Saskatoon - www.saskatoon.ca - Saskatoon Light & Power - Service Guide.
- City of Swift Current - use SaskPower Electric Service Requirements.

6-206 - Service Equipment Location**6-206(1)(c) - Panels**

Insulated exterior walls are considered an undesirable location for recessing of panels.

Panelboards shall be in the building being served and the length of unfused service conductors shall not exceed 6 conduit meters. Where the service box or other consumer’s service equipment is located beyond six (6) conduit meters from the point where unfused service conductors enter the building, the conductors shall be run in threaded rigid metal conduit for the entire length inside the building.

Note: Metallic service conduits or service cables with metallic armor require bonding bushings in the main service. See 10-604 and 10-606 - Assuring Continuity at Service Equipment on page [33](#).

6-206(3) - Service Disconnect

1. The service **disconnecting means** shall be permitted to be placed on the outside of the building or on a pole, provided it is:
 - a. installed in the enclosure approved for the location or protected against the weather;
 - b. protected against mechanical damage if it is located less than 2 m above ground; and
 - c. service entrance rated.
2. Grounding must be done at the service disconnect (neutral grounded), after the disconnect, the neutral must be insulated and isolated from the bond.

6-208 - Service Conductors Under House Trailer/Mobile Homes

Service conductors installed underneath a house trailer/mobile home must be approved for the location and supported to the underside of the mobile home or buried.

For the purposes of 6-206(1)(c), the 6 m rule does not apply to under the mobile home.

6-300 - Underground Consumer's Services on New Housing

Caution must be taken by the Electrical Contractor when installing a customer owned underground service from the meter socket to the panel location. The consumer's underground cable must be installed tight to the basement wall anywhere within 1.5 meters of the meter socket location. This will prevent the cable from being damaged when the utility trenches in their underground service cable from the pole or pedestal to the socket. Once the cable is past the 1.5 meter distance, it may then be installed out away from the basement wall.

As per 12-012(11) & (12), the installation will also require frost sleeves at both ends and marking tape must be installed in the cable trench.

Underground service entrance cable as described in Table 19 shall be allowed to be supplied from a branch circuit overcurrent device when used as an underground feeder to a new service.

6-404 - Grounded Circuit Conductor (Neutral) in CT Cabinets

The grounded circuit conductor must be brought in to the CT cabinet and broken to meet metering requirements.

SECTION 8 - CIRCUIT LOADING AND DEMAND FACTORS

8-102 - Voltage Drop

Precautions must be taken to prevent any services or branch circuits from exceeding 5% voltage drop from the utility to the end use, with no feeder or branch circuit exceeding 3%. The calculation of voltage drop on services and branch circuits is based on the known load, or 80% of the overcurrent device for unknown loads. See Rule 8-102 and Table D-3 in the CEC and Table D-23 as shown below.

Table D-23

MAX 3% VOLTAGE DROP

Values in Ampere-feet
Copper conductor

Distances shown are in Ampere-feet. Divide the number in the table by the amperes to obtain feet.

For aluminum conductors find the correct size of copper conductor and add two AWG sizes.

3-phase	#14	#12	#10	#8	#6	#4	#3
208V	1047	1664	2646	4211	6681	10648	13391
480V	2416	3840	6107	9717	15418	24573	30901
600V	3020	4800	7634	12146	19272	30717	38627
3-phase	#2	#1	1/0	2/0	3/0	4/0	
208V	16865	21370	26897	33950	42740	53908	
480V	38919	49315	62069	78346	98630	124404	
600V	48649	61644	77586	97933	123288	155505	
1-phase	#14	#12	#10	#8	#6	#4	#3
120V	604	960	1527	2429	3854	6143	7725
240V	1208	1920	3053	4858	7709	12287	15451
347V	1790	2840	4520	7180	11352	18078	22638
1-phase	#2	#1	1/0	2/0	3/0	4/0	
120V	9730	12329	15517	19587	24658	31101	
240V	19459	24658	31034	39173	49315	62202	
347V	28740	36419	45868	57975	73035	91343	

8-104(3)(a) - Water Heaters

Water heaters are considered continuous loads and therefore the circuit conductor and the overcurrent device shall be loaded to a maximum of 80%. Example - if the water heater is rated at 3000 watts on 240 volts (12.5A), you will require a #12 AWG conductor and a 20 amp breaker.

8-200 & 8-202 - Demand for Electric Vehicle Charging**Single Dwellings**

8-200(1)(a)(vi) - Electric vehicle charging equipment loads with demand of 100%.

Apartment and Similar Multifamily

8-202(3)(d) - Any electric vehicle charging equipment not located in dwelling units with demand of 100%.

8-304(1) - Number of “Unspecified Load” Receptacles on Branch Circuits

The maximum number of “unspecified load” receptacles on a branch circuit is 12 regardless of the circuit rating.

SECTION 10 - GROUNDING & BONDING**10-204, 10-624 & 10-1100 - Grounded Circuit Conductor (Neutral)****277/480 and 347/600 Systems**

For a solidly grounded system, it is necessary to bring the grounded circuit conductor (neutral) into the main switchgear on a 277/480 Volt (or 347/600 Volt) service, even if the neutral is not required, or utilized.

Connecting NGR Equipment to the Utility Transformer

When an NGR is installed on the service, the neutral conductor should not be brought into the main switchgear, unless otherwise required for metering purposes, or to service line to neutral loads.

NGR systems are not solidly grounded systems. The conductor from the transformer to the NGR must take the most direct route and is not required to enter the main service disconnect. Rule 10-1108 provides a number of conditions that must be met with regards to this conductor:

- be installed in an approved manner;
- not be grounded; and
- have an ampacity rating equal to or greater than the rating of the neutral grounding device but not smaller than No. 8 AWG.

10-406(4) - Replacement of Furnaces

When a furnace or similar piece of equipment is being replaced, the Electrical Contractor is responsible for bonding the gas line as required by the Canadian Electrical Code. The branch circuit cable, providing it has an internal bond conductor and the low voltage thermostat cable, does not require replacement. Also see Section 26, Rule 26-806(1)(5)(6)(7), page [62](#).

Caution: Some new furnaces require 20 amp breakers

10-604 & 10-606 - Assuring Continuity at Service Equipment

The requirements for bonding are more restrictive at services than downstream from the main disconnect. Service equipment and enclosures may be called upon to carry heavy fault currents in the event of a line-to-ground fault. The service conductors in these enclosures have only short circuit protection provided by the overcurrent device on the line side of the utility transformer. While there are various options available to assure the continuity of service equipment and enclosures, the use of a **Bonding Bushing** is the **only** acceptable method to ensure the bonding of metal conduits or the metal armour of cables that use locknuts as a method of attachment to an enclosure. It is important to recognize that concentric or eccentric knockouts in enclosures such as panelboards have never been investigated for their ability to carry fault current.

10-624(4) - Bonding Splitters to Ground

All weather-proof splitters must be bonded. This may be achieved by bonding the enclosure to the neutral when on the line side of the service disconnect. When the splitter or junction box is on the branch circuit side, the enclosure shall be bonded with a bond conductor or a metallic raceway.

10-700(2) - All Services Require One Ground Plate or Two Rods

One ground plate or two ground rods are required for a temporary service, bus shelter, phone booth, cable television distribution equipment, sign or other similar installation; row housing such as semi-detached, duplex, triplex, fourplex; additional service on farms, acreages or single family dwelling; additional service on farms, acreages or single family dwellings where the first service contains at least two rods, one ground plate or a field assembled electrode.

10-706 - Lightning Protection

Recommended practices for the installation of a lightning protection system, including lightning rods, interconnecting conductors and ground electrodes, are given in CAN/CSA-B72. Other national and international industry-recognized standards on lightning protection may also be available. Also as per Rule 12-016 where lightning down conductors are installed, electrical wiring shall, where practicable, be kept at least 2 m from such conductors, except where bonding is provided in accordance with Rule 10-702.

Note: Lightning protection system installations are to be installed by a licensed contractor and require an electrical permit.

10-812 - Grounding Conductor Size for Alternating-Current Systems

The code no longer requires different sized grounding conductors based on the size of the circuit conductors. The grounding conductor connected to a grounding electrode conforming to Rule 10-700 shall be not smaller than No. 6 AWG.

Rule 10-810(2) which references 10-812 says that the maximum size conductor required for the system in subrule (2) is No. 6 AWG.

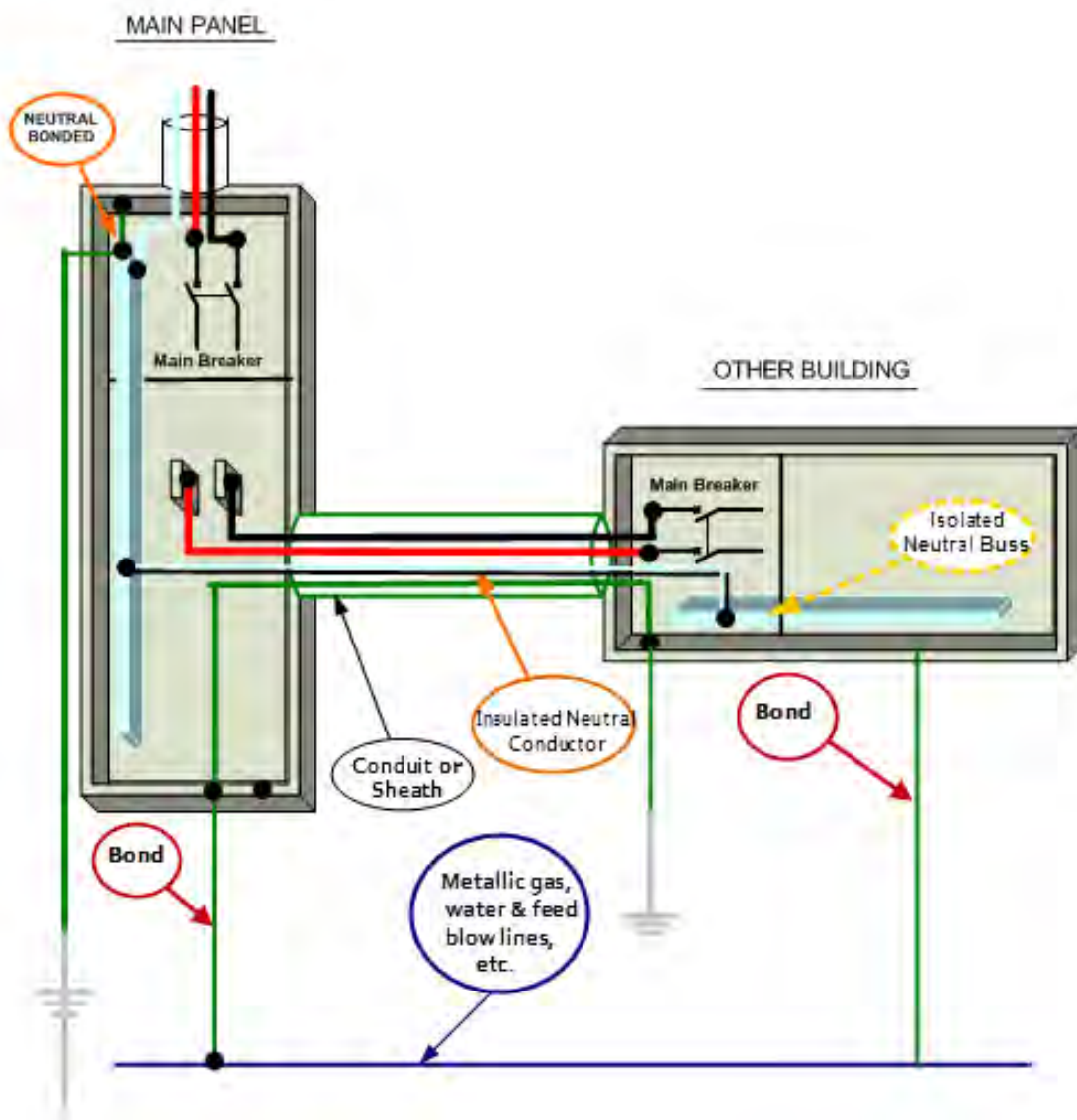
Table 17 has been deleted and is no longer required.

Alternate Method for Grounding & Bonding

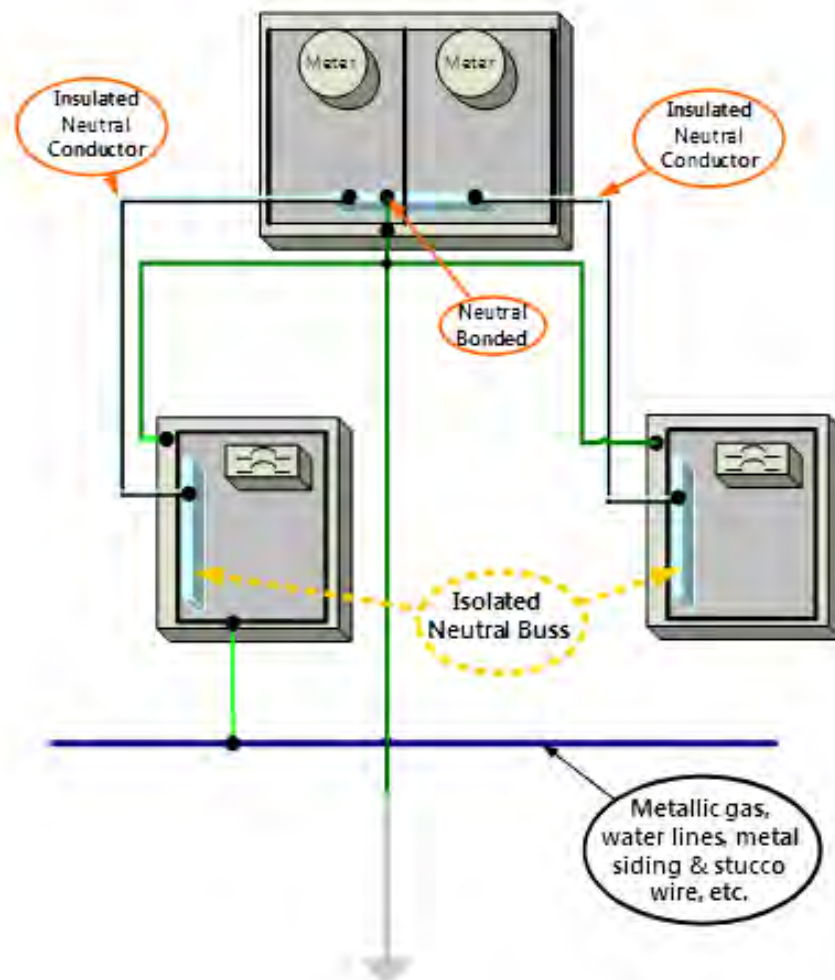
Electrical Inspections has become aware of some unsafe conditions due to parallel neutral current return paths. In an effort to minimize this potential hazard as much as possible, Inspections will now accept all the following methods of grounding and bonding for low voltage services.

Note: In the 2015 CEC, buildings housing livestock will be mandated to have a bonding conductor to be run with the feeder conductors as well as a grounding electrode at the building as per Alternate Method 1.

Alternate Method 1

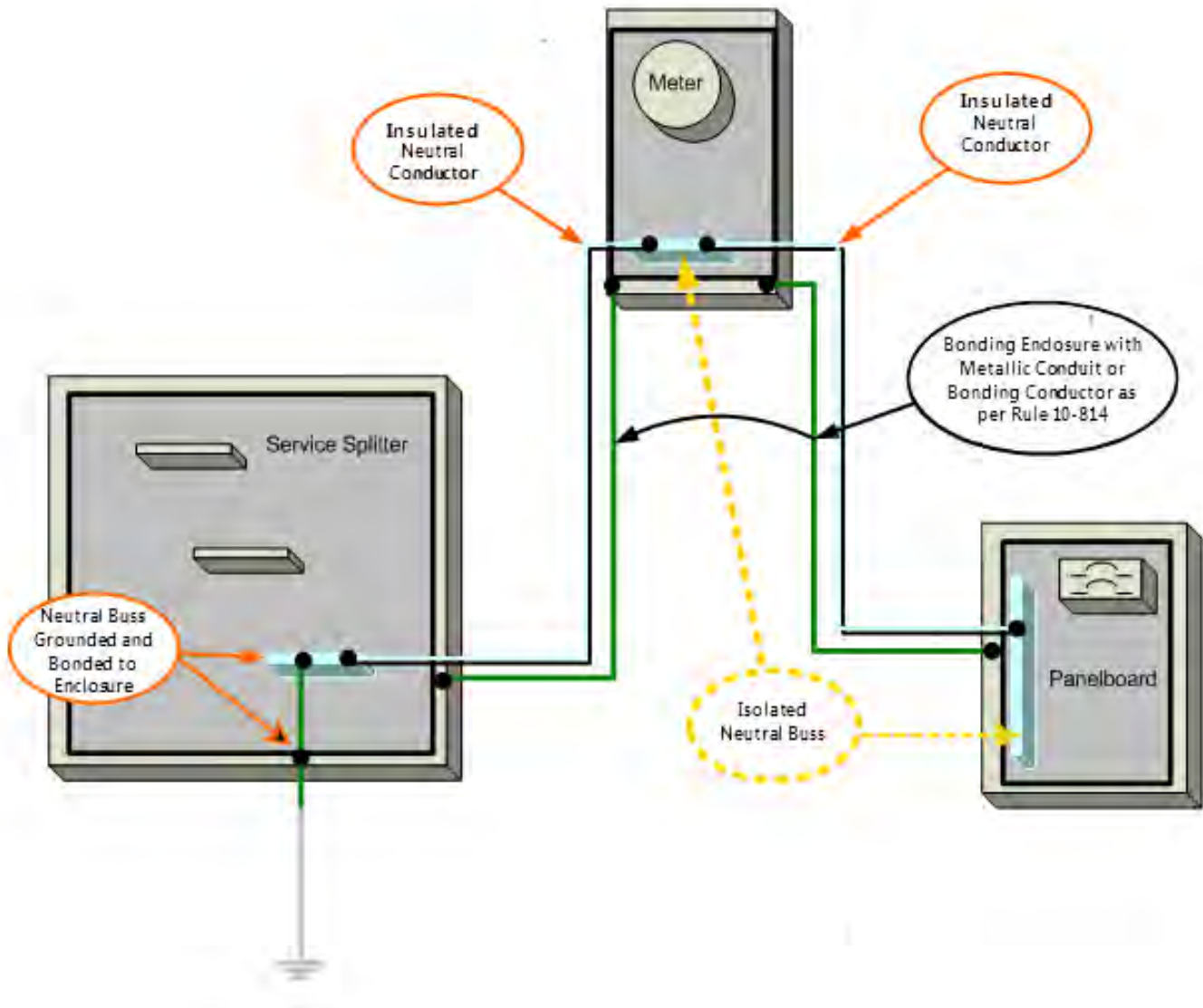


Alternate Method 2



Note: This method is typical of a single meter and panelboard installation

Alternate Method 3



Notes:

1. Bonding of equipment covered in Rule 10-106 shall be connected to the panelboard enclosure.
2. This diagram is typical of a single service and up to a maximum of 4 consumer services per supply service.
3. Wiring methods utilized shall ensure that the neutral/grounded service conductor be isolated from ground after the connection to the grounding electrode.
4. This diagram is typical for underground and overhead supply services.
5. Should the supply splitter not be required, the grounding electrode shall connect to the grounded service conductor at the first point of supply grounded conductor termination. (i.e. meter mounting device)
6. Minimum grounding conductor size #6; bonding conductors shall be based on Table 16.

SECTION 12 - WIRING METHODS

12-010(3) - Wiring in Ducts and Plenums

When a ceiling space such as a truss floor system is used as a return air space, the wiring in this space must be FT-4 rated; i.e. bx cable.

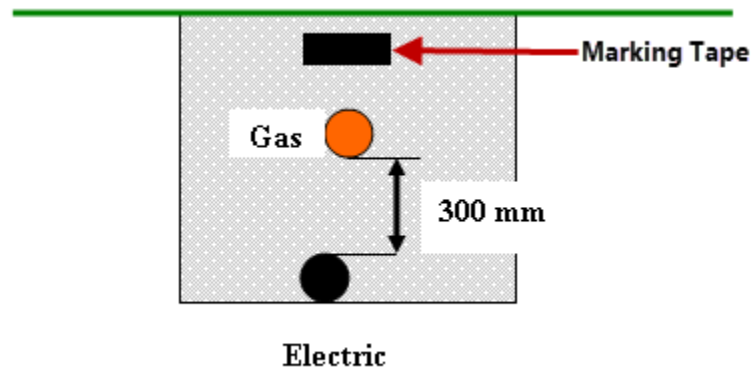
12-012 - Burial of Conductors in Proximity to Gas Lines

Electrical wiring shall not be installed within 600 mm of a utility natural gas line.

Electrical wiring may be installed in the same trench as customer-owned propane or natural gas lines provided the conductors are placed at a greater depth and a separation of at least 300 mm of earth or 150 mm if a treated plank is installed between the piping and conductor.

Customer owned propane or natural gas lines refers to customer lines supplying customer premises.

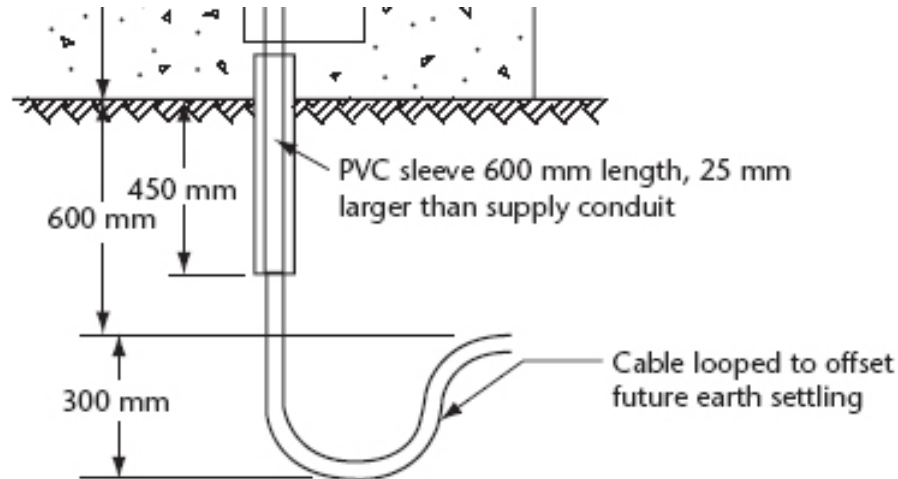
Customer owned propane or natural gas lines are to be buried at a minimum of 381 mm (15 in.) and, if subject to vehicular traffic, a minimum of 600 mm.



12-012(11)(12) - Frost Sleeves and Marking Tape

All underground raceways or cables subject to movement require provisions to be made to prevent damage to the conductors or the electrical equipment. The intent of this rule is to avoid damage to the raceway or cable (during settlement/frost).

Underground installations must have a suitable marking tape buried halfway between the cable and grade level and the tape must extend the entire length of the trench.



12-120 - Supporting of Cables

12-120(1) - Horizontal

Permanently installed cables and conduits supplying motors, pumps, pressure switches or any other electrical equipment shall be supported as required by Section 12. Cables and conduits must be supported off of the ground by an approved method such as cable tray, strut, etc. Cables must be supported within 300 mm of any junction box (**this includes oil wells**). When installing cables, you must ensure that there is no stress on the connectors from the weight of the cable.

12-120(2)(4) - Vertical

Vertical runs of armoured or sheathed cable such as TECK90, RA90, RC90, AC90 and ACWU90 shall have the internal cable assembly supported at intervals not exceeding those specified in Table 21 or by:

- incorporating a bend or bends equivalent to a total of not less than 90 degrees at intervals not exceeding the distances specified in Table 21;
- installation of a horizontal run of the cable not less than the length of the vertical run; or
- use of cable that is specifically designed for vertical runs.

The design and construction of cable types such as TECK90, RA90, RC90, AC90 and ACWU90 does not provide internal support between the sheath or armour and internal cable assembly. Horizontal runs of TECK90, RA90, RC90, AC90 and ACWU90 that equal or exceed the vertical length or that incorporate a bend or bends equivalent to a total of not less than 90 degrees reduces the strain on conductor terminations.

12-1118 - Expansion of Rigid PVC Conduit

PVC conduit shall be installed as per manufacturer's specifications and the CEC. For example, assuming a temperature change of 70 degrees C, this would mean a minimum of one expansion joint or more may be required depending on the maximum range of the expansion joint. See Rule 12-1012 and Appendix B.

12-2200 - Clearance for the Installation of Cable Tray

(6) Cable trays require 600 mm horizontal clearance **on one** side of cable trays mounted adjacent to one another, or to walls or other obstructions where the width of the cable tray installation does not exceed 1 m. Where the width of the cable tray installation exceeds 1 m, 600 mm horizontal clearance is required **on each** side of the tray.

(7) At least one expansion joint shall be installed in any cable tray run where the expansion of the cable tray, due to the maximum probable temperature change during and after installation, can damage the cable tray as per the manufacturer's instructions.

12-2202 & 36-100(3) - Conductors of Different Voltages in Cable Tray

The requirements for the installation of teck cable and tray cable of different voltages that run adjacent to each other in cable trays are as follows:

1. A barrier **is not required** to separate **teck** cable or armored cable of different voltages that are installed in the same cable tray.
2. A barrier **is only required** when **tray** cables of different voltages are installed in the same cable tray, if the voltage in one or more cables exceed 750 volts.

12-2250 - Cable Buss

Cable buss is a self-contained engineered system incorporating a special tray, cables, cable supports and cover.

Rules apply only to the installation of cable buss as a *complete system approved for the purpose*.

A complete set of engineering and installation drawings must be submitted to the Inspections Department.

12-3000(2)(3) – Continuity of Cables and Conduits Entering Non-Metallic Boxes

Entry of metallic conduit or cables into non conductive junction boxes, i.e. Fiberglass or PVC, requires bonding bushings and all bushings must be bonded together.

Metallic fittings used in a non-conductive box must be bonded through the use of grounding bushings.

12-3000(9) - Box for Ceiling Fan

Where a pendant ceiling fan and all possible accessories weigh less than 16 kg and are intended to be supported on an outlet box, the outlet box shall be **approved and marked for fan support** and:

- a. securely attached directly to the building structure; or
- b. attached by a bar hanger securely attached directly to the building structure.

Pendant ceiling fan and all possible accessories weighing 16 kg or more shall be supported independent of the outlet box.

SECTION 14 - PROTECTION AND CONTROL

14-100(g) - Loading Cables on Farms and Acreages

Caution must be taken to prevent overloading of cables which do not have customer protection on the supply side. On a farm service center, where the feeder cable terminates in an exterior splitter for the purpose of supplying more than one service, the total amperage of all main breakers may not exceed the ampacity of the feeder cable.

14-104(1) - Adjustable Main Breakers

- a) Ensure the trip settings for the adjustable overcurrent protection device is documented and on-site for the inspection; and
- b) A lamicoid plate with the overcurrent setting displayed on the main breaker is required.

14-104(2) - Rating of Overcurrent Devices

1. The rating or setting of overcurrent devices shall not exceed the allowable ampacity of the conductors they protect; and
2. Except as provided by other sections of the code, the rating of overcurrent protection shall not exceed:
 - a. 15 A for No. 14 AWG copper conductors;
 - b. 20 A for No. 12 AWG copper conductors;
 - c. 30 A for No. 10 AWG copper conductors;
 - d. 15 A for No. 12 AWG aluminum conductors; and
 - e. 25 A for No. 10 AWG aluminum conductors.

SECTION 16 - CLASS 1 AND CLASS 2 CIRCUITS

16-008 - Hazardous Locations

Extra low-voltage power circuits installed in hazardous locations on oil field sites (i.e. Solar and 12 Volt equipment) must be installed in accordance with the applicable rules of Section 18.

SECTION 18 - HAZARDOUS LOCATIONS

18-006(c) - Ammonia Compressor Rooms

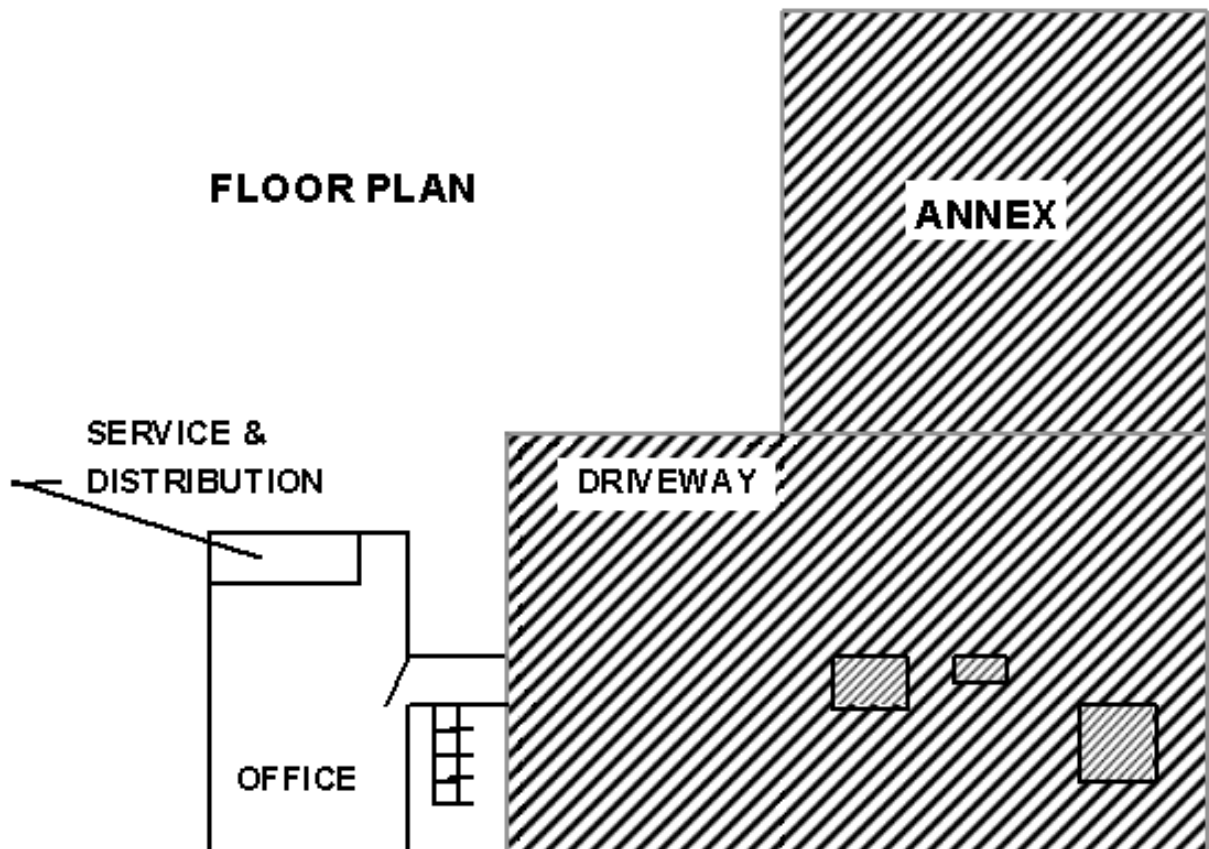
When ammonia is used in a refrigerant system, the room shall be considered Class I, Zone 2 hazardous location unless the room is constructed to a Class T machinery room as specified in the CSA standard B52-95 Mechanical Refrigeration Code.

18-008(a) - Classification of Grain Handling Facilities

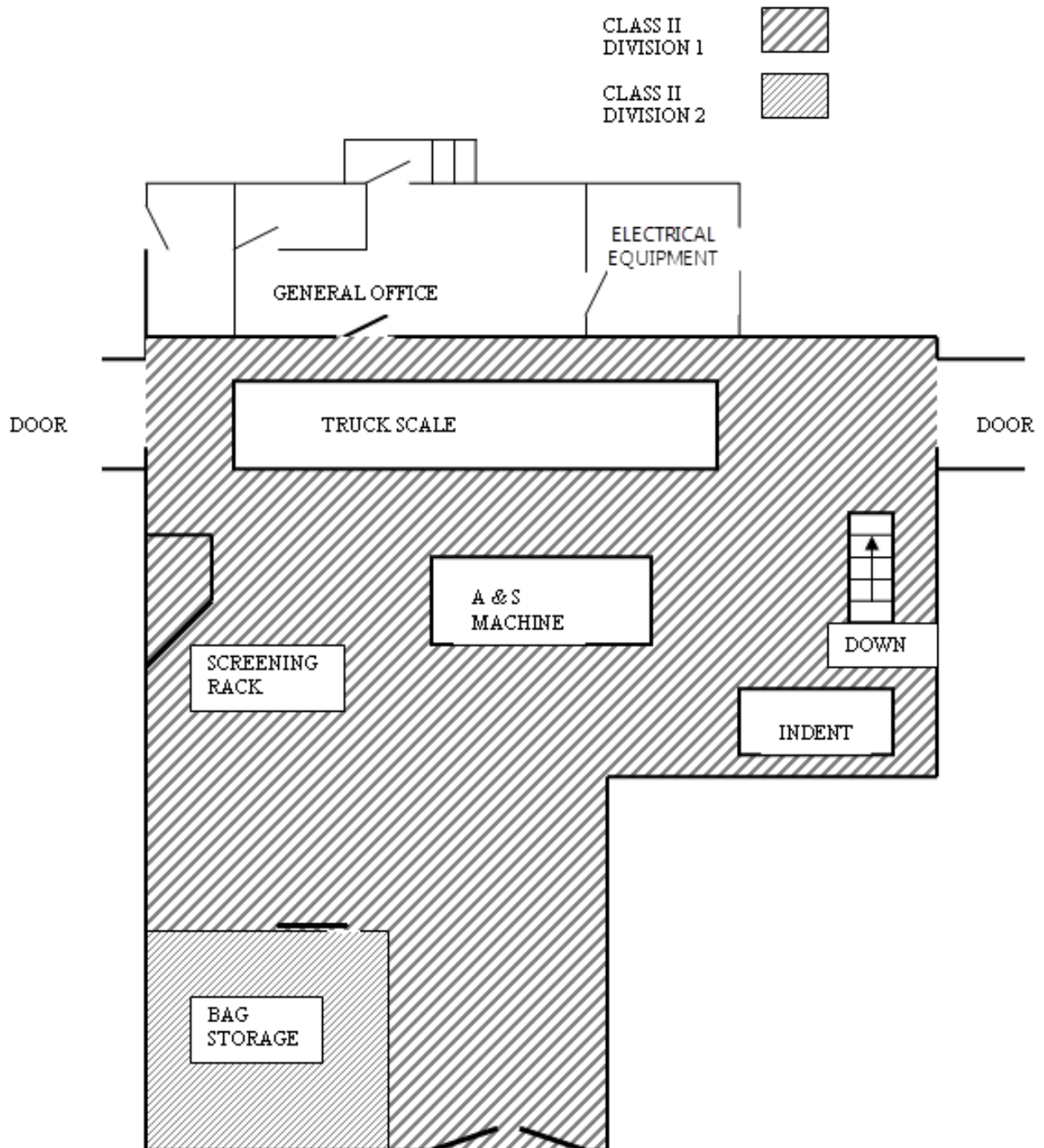
All grain handling systems are classified Class II, Division 1 locations, with the exception of areas re-classified by a Professional Engineer.

18-008 - Hazardous Area Classification - Grain Elevator

**CLASS II
DIVISION 1**



18-008 - Hazardous Area Classification - Main Floor Plan - Seed Cleaning Plant

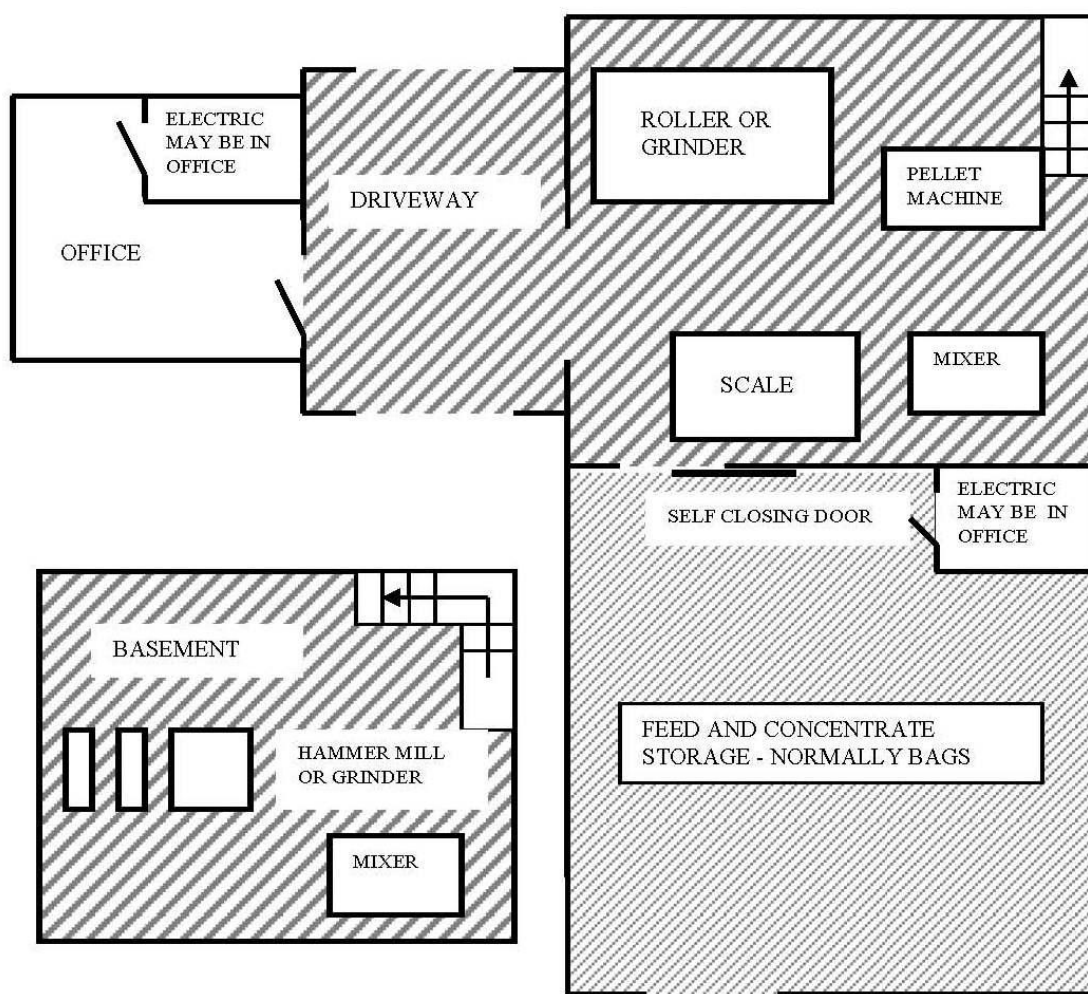


18-008 - Hazardous Area Classification

CLASS II
DIVISION 1



CLASS II
DIVISION 2



18-008 - Bio Diesel, Canola Crushing Plants

Recently, there has been an increased interest in the development of bio diesel facilities throughout the province. SaskPower Inspections wants to inform all Electrical Contractors of items that may affect an installation.

These facilities must be classified by an Electrical Engineering firm to the proper classification of the Canadian Electrical Code. Electrical plans must be submitted to Electrical Inspections for review.

As per Section 18-008 of the CEC, Canola crushing is a Class II, Division I location and all wiring must meet the minimum Canadian Electrical Code requirements for the installation. Canola storage and product transferring would fall under the same area classification.

In the process of creating bio diesel, an additive must be added. If that product is methanol or another volatile additive, a hazard arises. The process must now meet the intent of Rule 18-006 classification; the area classification is either Class I, Zone 0, 1 or 2 depending on the engineering area classification. Storage of methanol is under the same area classification. Bio diesel storage is the same as regular diesel and must also meet all other provincial codes and rules.

SaskPower Inspections wants to maintain a safe installation for both the facility and its employees. All electrical work must be completed by a Saskatchewan Licensed Electrical Contractor and meet the requirements of the Canadian Electrical Code.

18-010 - Woodworking Plants and Sawmills

The CEC classifies these areas as Class III Division I locations without adequate dust collection. Areas may be reclassified by a Professional Engineer. For the purposes of this rule, non-commercial residential garages and farm shops will not be considered wood working plants.

The following will be permitted where adequate dust collection equipment is installed:

- a. Panel boxes, controllers, etc. shall be dust tight or in dust tight enclosures.
- b. Wall surface wiring shall be threaded rigid, EMT (with rain-tight connectors) or Teck cable with dust-tight Teck connectors.
- c. Ceiling surface wiring may be ordinary location wiring methods.
- d. Boxes shall comply with 18-302(2).
- e. Concealed wiring may be type AC or NM cable.
- f. Concealed boxes and fittings may be ordinary type.
- g. Switch and receptacle covers shall be of the weatherproof type.
- h. Where duplex receptacles are used, a separate self-closing cover will be required for each section of the receptacle.
- i. General purpose fluorescent lighting fixtures may be installed:
 - i) if mounted directly on the ceiling; or
 - ii) if suspended and provided with adequate dust shields to prevent the accumulation of dust.

18-052 - Marking of Equipment Class 1 Locations

CSA has adopted the IEC Standard for Equipment Protection Levels (EPL's) as a requirement for marking on equipment in Class 1 Hazardous Locations. This marking system will now appear on new hazardous location equipment.

Class1 Zone	Acceptable Equipment Protection Level
Zone 0	Ga
Zone 1	Ga or Gb
Zone 2	Ga, Gb or Gc

18-108(3)(4)(5)(6) - Sealing Class 1, Zone 1

Cable Seals

In the previous codes, a cable that left a Class 1, Zone 1 area **from a box that was not required to be explosion proof** and was more than 10 m in length, it was not required to have an explosion proof seal on it. This rule has been removed.

In the 2012 Code, a cable entering or leaving a Class 1, Zone 1 location must be sealed where it first terminates in the hazardous location regardless of the type of box it enters.

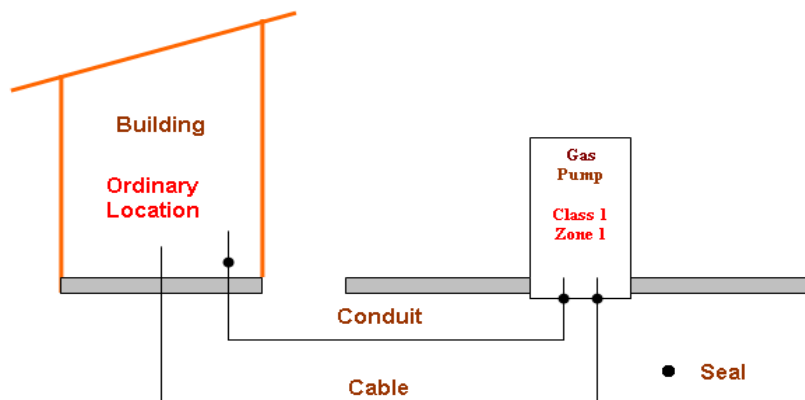
18-154(3)(4)(5)(6)(7) - Sealing Class 1, Zone 2

Cable Seals

In the previous codes, a cable that left a Class 1, Zone 2 area (**from a box that was not required to be explosion proof**) and was less than 10 m in length, it was required to have an explosion proof seal on it. This rule has been removed.

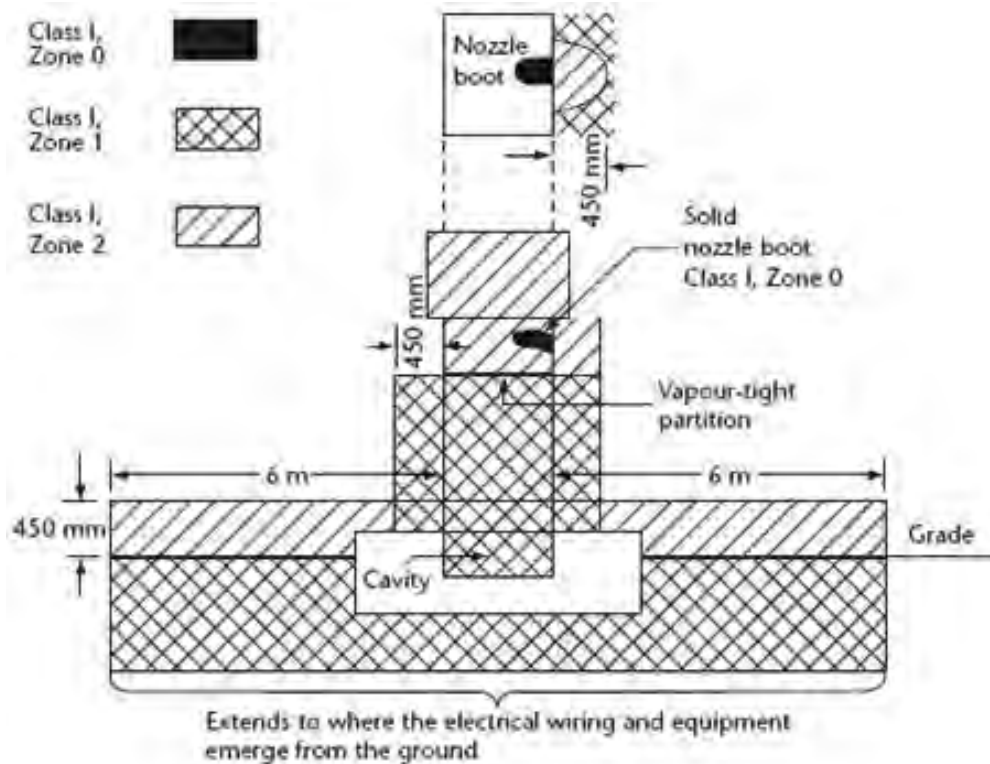
In the 2012 Code, when a cable is leaving the hazardous area from a box that was not required to be explosion proof, a seal is not required regardless of the cable length, except if the cable is terminating in a non-hazardous location with a negative atmospheric pressure greater than 0.2 kPa.

Hazardous Location Sealing Gas Pumps



SECTION 20 - FLAMMABLE LIQUID AND GAS DISPENSING AND SERVICE STATIONS, GARAGES, BULK STORAGE PLANTS, FINISHING PROCESSES AND AIRCRAFT HANGARS

20-004 - Island Gas Pump



20-062 - Compressed Natural Gas Refuelling Stations, Compressors and Storage Facilities

Compressed natural gas refueling stations, compressors and storage facilities shall be classified as shown in Table 64.

20-100 - Commercial Garages

Vehicle repair and storage areas with more than three vehicles contain hazardous areas as per 20-102. This includes the indoor parking area of a condo and similar locations.

All adjacent rooms not suitably cut off with a 50 mm barrier are classified as hazardous up to 50 mm above the parking floor.

Example - an underground parking garage in a condo unit with an electrical room, storage room, elevator room, etc. off of the parking area would require a 50 mm curb to make the room a standard area.

20-102 - Hazardous Area Commercial Garages

The hazardous area as described in this rule has been clarified as not to include vehicle showrooms, provided they are suitably cut off from the hazardous location.

20-102(4) - Clarification of Pits or Depressions Below Floor Level

For the purpose of Rule 20-102(4), a pit is defined as:

“Any area below grade that everyday work does not take place; i.e. sump pit, elevator pit, etc.”

For the purpose of Rule 20-102(2), a Below Grade Room is defined as:

“Any area that daily work and storage of product takes place; i.e. vehicle service area, storage areas, etc.”

“Reclassification” of any areas with regards to ventilation must be done through a Professional Engineer, complete with stamped drawings.

20-110(2) - Equipment Above the Hazardous Area

This rule had called for the use of totally enclosed type light fixtures below 3.6 m in a commercial garage but has been relaxed to being protected from mechanical injury by a guard or by location.

20-204 - Residential Garage

Residential Garages that have an entrance to the basement require a minimum 50 mm curb at the top of the landing or 50 mm above the basement floor will be considered a hazardous location.

20-300 - Anhydrous Ammonia

Anhydrous ammonia is considered to be a volatile flammable liquid and, as such, shall be wired in accordance with Rules 20-302 to 20-312, regardless of the aggregate capacity of the tank.

20-400 - Finishing Processes

We are starting to see the use of “water base” or “waterborne” paints in automotive and other finishing processes. While the base may be water, other components of the paint are flammable and therefore Section 20 still applies, unless it can be proven with the MSDS sheets that there are no flammable components involved.

Applies to Areas

Where paints, lacquers or other flammable finishes and fiberglass processes are regularly or frequently applied by spraying, dipping, brushing or by other means and where volatile flammable solvents or thinners are used or where readily ignitable deposits or residues from such paints, lacquers or finishes may occur.

20-402 - Paint Mixing Rooms

All paint mixing rooms are classified as Class I, Zone 1 locations unless it can be proven that all the products involved are non-flammable.

DEFINITIONS AS PER NFPA 33

SPRAY AREA - Any area in which dangerous quantities of flammable or combustible vapours, mists, residues, dusts or deposits are present due to the operation of spray processes. It can be either enclosed or unenclosed and includes:

- a. any area in the direct path of a spray application process;
- b. the interior of any exhaust plenum and any exhaust duct leading from the spray process;
- c. the interior of any limited finishing workstation, spray booth or spray room, as herein defined; and
- d. the interior of any recirculation particulate filter, solvent concentrator unit, solvent distillation (recovery) unit, or recirculation air supply unit.

UNENCLOSED SPRAY AREA - Any spray area that is not confined by a limited finishing workstation, spray booth or spray room, as herein defined.

SPRAY BOOTH - A power-ventilated enclosure for a spray application operation or process that confines and limits the escape of the material being sprayed, including vapours, mists, dusts and residues that are produced by the spraying operation and conducts or directs these material to an exhaust system.

SPRAY ROOM - A power-ventilated fully enclosed room used exclusively for open spraying of flammable or combustible materials.

VENTILATION - Movement of air that is provided for the prevention of fire and explosion. It is considered adequate if it is sufficient to prevent accumulation of significant quantities of vapour-air mixtures in concentration over one-fourth of the lower flammable limit.

PREPARATION WORKSTATION - An enclosed, partially enclosed, or unenclosed power-ventilated apparatus that is used to control the dusts and residues generated by surface preparation activities, such as sanding. A preparation workstation is not a limited finishing workstation, spray booth or spray room, as defined herein.

FLUIDIZED BED - A chamber holding powder coating material that is aerated from below to form an air-supported, expanded cloud of the powder. The object or material being coated is preheated, then immersed into the cloud.

ELECTROSTATIC FLUIDIZED BED - A chamber holding powder coating material that is aerated from below to form an air-supported, expanded cloud of the powder. The powder is electrically charged with a charge opposite to that of the object or material being coated.

LIMITED FINISHING WORKSTATIONS - An apparatus that is capable of confining the vapours, mists, residues, dusts or deposits that are generated by a spray application process and that meets the requirements of NFPA 33, but does not meet the requirements of a spray booth or spray room, as herein defined.

For more information, see NFPA 33.

SECTION 22 - LOCATIONS IN WHICH CORROSIVE LIQUIDS, VAPOURS OR EXCESSIVE MOISTURE ARE LIKELY TO BE PRESENT

22-002 - Category 1 - Greenhouses, Freezers and Walk-In Coolers

All **greenhouses** are considered a Category 1 location. EMT with rain-tight fittings will be permitted.

The area classification may be reduced to a standard location if ventilation and humidity controls are present.

All walk-in **freezers** are a Category 1 location. All walk-in **coolers** are standard locations.

22-200(1) - Car Wash

Car washes are classified as Category 1 locations. All wiring methods and equipment must be approved for wet locations.

22-202 - Granular Fertilizer Storage

All bulk granular fertilizer storage areas are subject to corrosion from a combination of the fertilizer dust and moisture.

Raceways shall be PVC, or aluminum, with fittings and enclosure entries of such design as to not constitute dissimilar metals in contact with each other, and to exclude dust.

Teck 90 cable with non-corrosive fittings shall be permitted to be installed in bulk fertilizer storage structures.

22-204 - Buildings Housing Livestock or Poultry

Wiring in buildings housing livestock or poultry shall be the type listed in Table 19 for Category 1 and 2 locations **wet locations**.

With adequate ventilation wiring approved for a **damp location** as per Table 19 may be used.

Note: Aluminum conductors and Bx (AC 90, ACWU) cables are not approved for use in buildings housing livestock. Non-metallic sheathed cable is not approved for installation in a continuous raceway system.

Wiring Methods

The wiring methods that are acceptable in buildings housing livestock or poultry are:

1. PVC Conduit along with PVC boxes, straps and approved expansion joints as required. Wire within the conduit must be approved for a wet location or damp location if the barn is equipped with adequate humidity control.
2. Teck 90 Cable along with approved connectors, non-corrosive boxes and straps. Note the electrical continuity of the metal armour must be maintained throughout the cable runs.
3. NMWU Cable cannot be used in any location where it may be susceptible to damage by rodents.
4. All screws and equipment must be of the corrosion resistant type.

NMWU cannot be run inside the walls, inside the ceiling/attic or any other concealed space in a barn.

When NMWU cable is used and it has to pass through a location where it may be exposed to rodents, it must be provided with mechanical protection in the form of rigid steel, rigid non-metallic conduit or other suitable material when:

1. Installed in exposed locations within 300 mm above any horizontal surface; or
2. Installed in exposed locations on the sides of floor joists or other structural members less than 100 mm below the upper surface.

NOTE: When an office, tack room, riding arena, sales arena or similar room is attached or within the barn, the wiring methods are the same as the rest of the building (i.e. concealed NMWU is not permitted in the wall). If the room is separated from the barn by vapour tight walls, ceiling, floor and a sealed door the interior of this room is considered a normal location, the panel, etc., may be installed in this room.

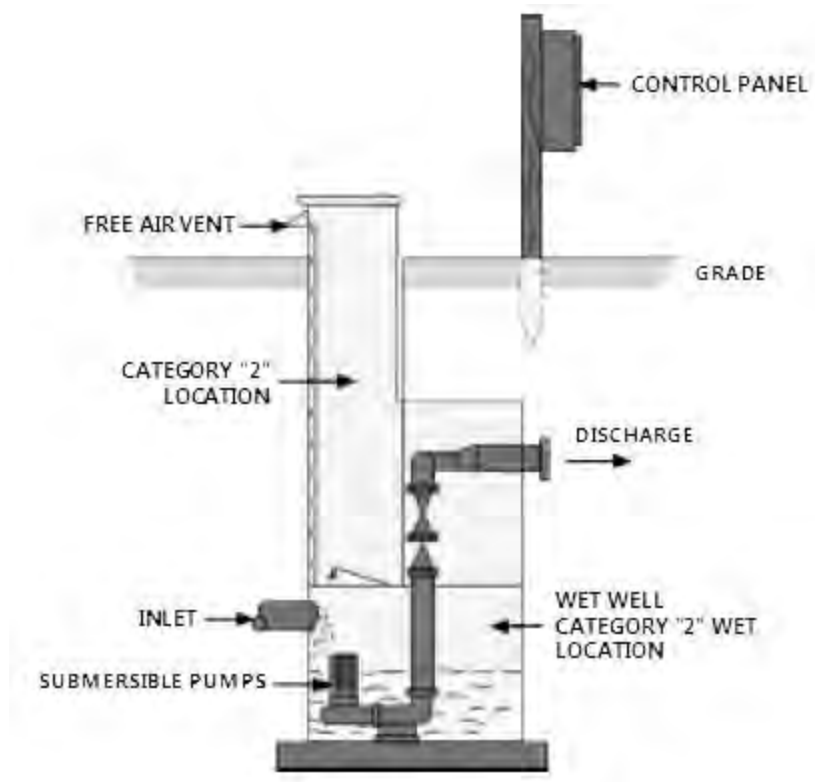
SEWAGE LIFT AND TREATMENT PLANTS

22-704 – Sewage Lift - Classification of Areas

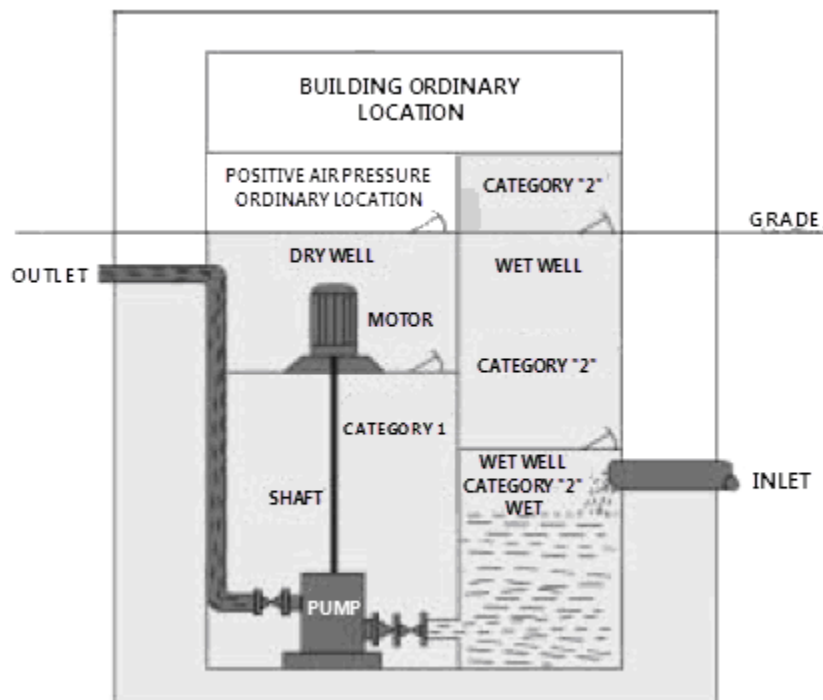
Sewage Lift & Handling

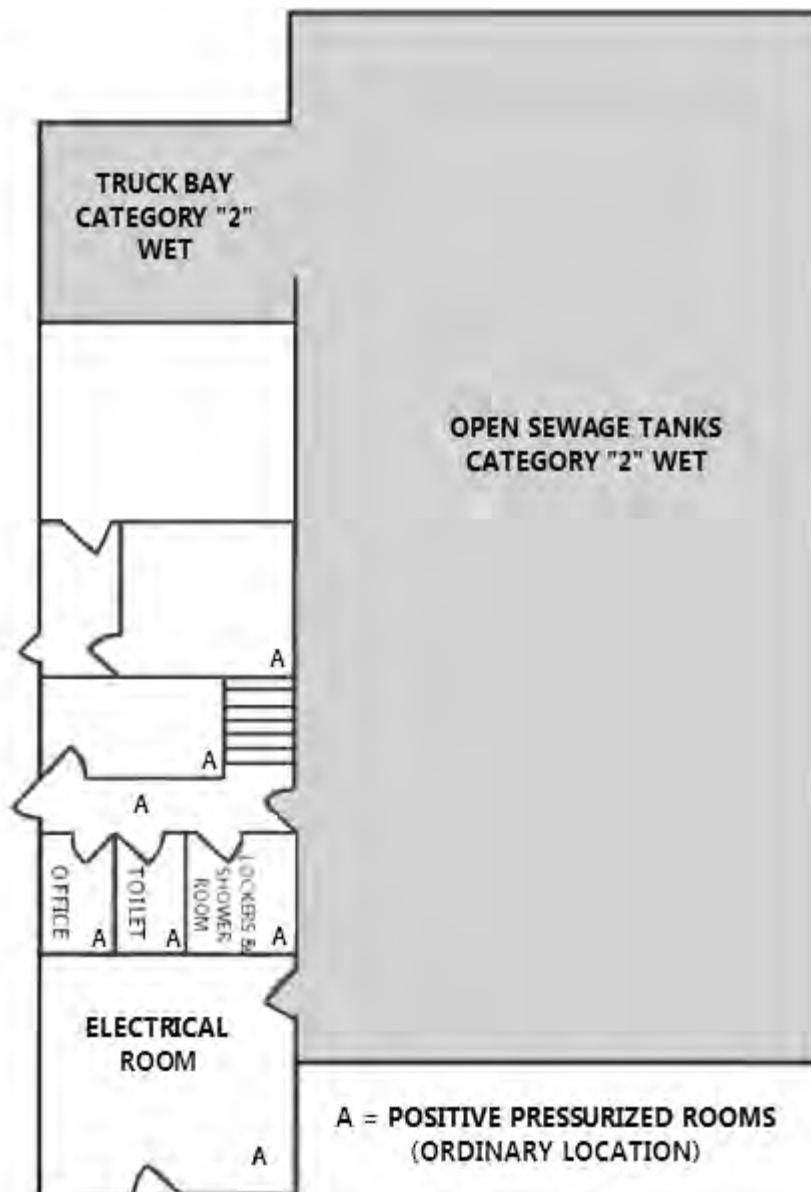
The following chart shows the classification of various locations in sewage lift and treatment plants		
Location	Condition	Classification
Wet Wells	With adequate continuous positive pressure ventilation	Class 1, Zone 2
All below-ground location	Suitably cut off from sewage gas location	Category 1 location
All locations	Sewage gas is present in explosive concentrations	Hazardous area and Category 2 location
All locations	Suitably cut off from a Category 2 location and not classified as a Category 1 location.	Ordinary location
All locations	Not suitably cut off from a Category 2 location but with adequate continuous positive pressure ventilation.	Ordinary location
Below-ground dry well locations	With adequate heating and adequate continuous positive pressure ventilation	Ordinary location

Typical Sewage Lift Station (self-contained)



Building – Ordinary Location





SECTION 24 - PATIENT CARE AREAS

Definitions - Health Care Facilities

Health Care Facility - Class A

A hospital, so designated by Canada or one of its Provinces or Territories, where patients are accommodated on the basis of medical need and are provided with continuing medical care and supporting diagnostic and therapeutic services.

Note: Class A Facilities include acute and complex care.

Health Care Facility - Class B

A facility where residents, as a result of physical or mental disabilities, are unable to function independently and are accommodated due to a need for daily care by health care professionals.

Note: Class B Facilities provide, e.g. extended, multi-level, hospice, psychiatric or intermediate care. The definition includes rehabilitation facilities.

Health Care Facility - Class C

A facility where ambulatory patients are accommodated on the basis of medical need and are provided with supportive, diagnostic and treatment services.

Note: Class C Facilities include, e.g. outpatient and surgical clinics, dental offices, doctors' clinics, private residences and group homes.

24-000 - Classification of Areas

Patient Care Areas are defined by the CAN/CSA-Z32 standard and include, but are not limited to, walk-in medical clinics, dental clinics, chiropractic clinics, optometrists and others. The CEC definition of a health care facility was changed to recognize that more and more treatment and testing, previously done in hospitals, is now being done in these facilities. This means that the specific rooms of a clinic in which treatment is given must be wired in accordance with Section 24 methods.

The health region, clinic or hospital administrators are the personnel who will determine the area use for their facilities.

24-102(6) - Receptacles or Equipment Not Part of Essential System

A branch circuit that supplies receptacles or permanently connected electrical equipment described in **Rule 24-300** shall not supply receptacles or permanently connected electrical equipment that are not part of the essential electrical system.

24-104 - Bonding to Ground

The minimum size equipment bonding conductor shall be sized not smaller than the minimum size required for circuit conductors. The minimum size circuit conductor shall be not smaller than No. 12 AWG.

All bond conductors shall be sized in accordance with Table 16, with no bonding conductor sized smaller than a No. 12 AWG.

Examples:

1. 40 A equipment requires No. 8 AWG (45A) conductor in conduit, this would require a #10 bonding conductor to conform to Table 16.
2. 5A equipment or a receptacle circuit would require No. 12 AWG circuit conductors and a No. 12 AWG bond conductor.

Rules 24-104(1) and 4-036 excludes the use of three wire armoured cables, other than ISO-ground cable, as the bond conductor needs to be insulated and shall have a continuous outer finish that is either green or green with one or more yellow stripes.

Non-metallic conduit, NMD cable and armoured cables with a PVC inner jacket (teck), provide sufficient insulation to permit the use of a bare copper bond conductor, minimum 12 AWG.

If they could become energized, exposed non-current carrying metal parts of non-electrical equipment, in a patient care environment, shall be bonded to ground using a copper equipment bonding conductor sized in accordance with Table 16 by connection to equipment bonding conductor or bonding busbar for that patient care environment.

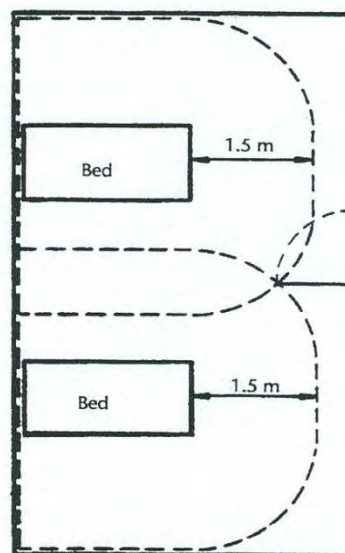
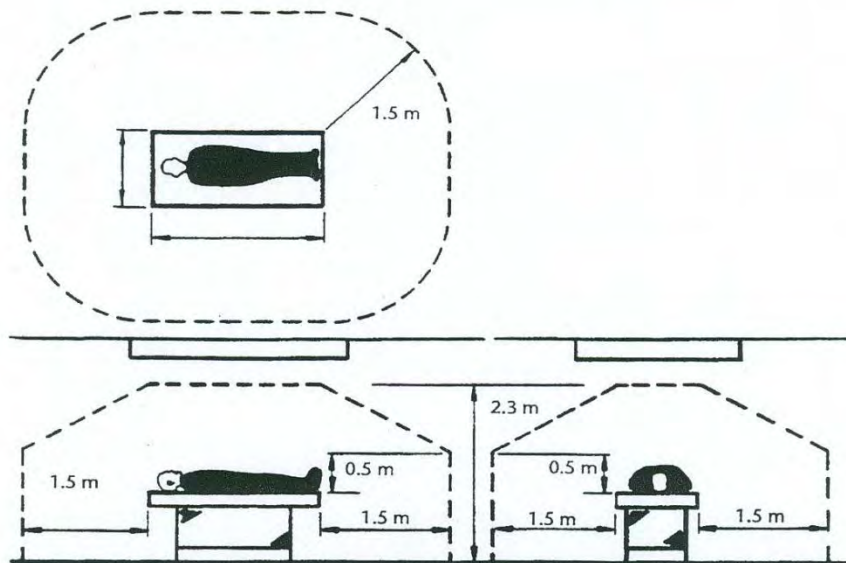
Examples of such equipment are metal parts of medical gas equipment, support arms, consoles, etc.

24-110 - Circuits in Intermediate and Critical Care Areas

The requirement of 2-wire circuits (i.e. dedicated grounded circuit conductors/neutral) applies to the patient care environments within intermediate and critical care areas.

CAN/CSA-Z32-Patient Care Environment (formally known as patient care location)

A zone in a patient care area that has been preselected for the accommodation of a patient bed, table or other supporting mechanism, and for the accommodation of equipment involved in patient treatment and which includes space within the room 1.5 meters beyond the perimeter of the bed in its normal location and to within 2.3 meters of the floor. The patient environment is a zone fixed to the supporting mechanism and does not move with the patient as the patient moves through the health care facilities.



Patient Care Environment

SECTION 26 - INSTALLATION OF ELECTRICAL EQUIPMENT

26-210 Capacitor Switching Devices

CAP RATING		AMPERES		CAP RATING		AMPERES		CAP RATING		AMPERES	
Volts	kVAr	Cap Amps	Fuse, PC or MC Brkr	Volts	kVAr	Cap Amps	Fuse, PC or MC Brkr	Volts	kVAr	Cap Amps	Fuse, PC or MC Brkr
240	2.5	6.01	15	480	2	2.41	15	600	5	4.81	15
	5	12	20		5	6.01	15		10	9.62	15
	7.5	18	30		7.5	9	15		15	14.4	20
	10	24.1	40		10	12	20		20	19.2	30
	15	36.1	50		15	18	30		25	24.1	40
	30	72.2	100		20	24	40		30	28.9	40
					25	30	50		40	38.5	70
	45	108	150		30	36.1	50		50	48.1	70
	60	144	200								
	75	180	250		40	48.1	70		60	57.8	90
	90	217	300		50	60.1	90		75	72.2	100
	120	289	400		60	72.2	100		80	77	125
	135	325	500		75	90.2	125		100	96.2	150
					80	96.2	150		120	115	175
	150	361	500		90	108	150		125	120	175
	180	433	600		100	120	175		150	144	200
	225	541	800		120	144	200				
	240	578	800						160	154	225
	270	650	1000		125	150	200		180	173	250
	360	866	1200		150	180	250		200	192	300
					160	192	300		225	217	300
					180	216	300		240	231	350
					200	241	350		250	241	350
					225	271	400		300	289	400
					240	289	400				
					250	301	400		320	306	500
									360	347	500
					300	361	500		375	361	500
					320	385	600		400	385	600
					360	433	600		450	433	600
					375	451	600				
					400	481	800				
					450	541	800				

SINGLE PHASE TRANSFORMER FULL LOAD LINE CURRENT IN AMPERES

kVA	120v	240v	480v	600v	2400v	4160v	14400v
2	16.7	8.3	4.2	3.3	0.83	0.48	0.14
3	25	12.5	6.3	5.0	1.25	0.73	0.21
5	41.7	20.8	10.4	8.3	2.08	1.2	0.35
7.5	62.5	31.3	15.6	12.5	3.13	1.8	0.52
10	83.3	41.7	20.8	16.7	4.17	2.4	0.69
15	125	62.5	31.3	25.0	6.25	3.6	1.04
20	167	83.3	41.7	33.3	8.33	4.8	1.39
25	208	104	52.1	41.7	10.4	6.0	1.74
30	250	125	62.5	50.0	12.5	7.2	2.08
37.5	313	156	78.0	62.5	15.6	9.0	2.61
50	417	208	104	83.3	20.8	12	3.47
75	625	313	156	125	31.3	18	5.21
100	833	417	208	167	41.7	24	6.94
167	1391	695	347	278	69.6	40.1	11.6
200	1667	833	417	333	83.3	48.1	13.9
250	2083	1041	520	416	104	60.1	17.4
333	2115	1387	693	555	138	80	23.1
500	4167	2083	1042	833	208	120	34.7
750	6250	3125	1563	1250	313	180	52.1
1000	8333	4167	2083	1667	417	240	69.4

$$\text{KVA} = \text{Voltage (Current)} / 1000$$

THREE PHASE TRANSFORMER FULL LOAD LINE CURRENT IN AMPERES

kVA	208v	240v	480v	600v	2400v	4160v	13800v	14400v
3	8.3	7.2	3.6	2.9	0.72	0.42	0.126	0.120
6	16.6	14.4	7.2	5.8	1.46	0.82	0.251	0.241
9	25	21.7	10.8	8.7	2.17	1.25	0.377	0.361
15	41.7	36.1	18.2	14.5	3.61	2.09	0.628	0.601
30	83.4	72.3	36.1	28.9	7.23	4.17	1.26	1.202
45	125	108	54.2	43.4	10.8	6.26	1.88	1.805
50	139	120	60.2	48.2	12	6.96	2.09	2
75	208	181	90.3	72.3	18.1	10.4	3.14	3.005
112.5	313	271	135	108	27.1	15.7	4.71	4.51
150	417	361	181	145	36.1	20.9	6.28	60.1
200	556	482	241	193	48.2	27.8	8.37	8.02
225	625	542	271	217	54.2	31.3	9.41	9.025
300	834	723	361	289	72.3	41.7	12.55	12.02
450	1249	1083	541	433	108	62.5	18.83	18.04
500	1390	1204	602	482	120	69.6	20.92	20.07
750	2082	1804	902	722	180	104	31.38	30.07
1000	2776	2406	1203	962	241	139	41.84	40.09
1500	4164	3608	1804	1443	361	208	62.76	60.14
2000	5552	4811	2406	1925	481	278	83.67	80.19

$$\text{KVA} = 1.73 (\text{Voltage}) (\text{Current}) / 1000$$

26-256 - 3 Phase Dry-Core Transformers

3 Phase Dry Core Transformers-Rule 26-256 & 26-258																		
KVA	600 Volt						208 Volt						480 Volt					
	FLA	1.25	*COND.		O.C.	FLA	125%	*COND.		O.C.	EQUIP. RATING	FLA	125%	*COND.		O.C.		
			75 °	90 °				75 °	90 °					75 °	90 °			
4.5	4.3353	5.4191	14	14	15	12.506	15.632	12	12	20	30	5.4191	6.7738	14	14	15		
9	8.6705	10.838	14	14	15	25.011	31.264	8	8	40	60	10.838	13.548	14	14	15		
15	14.451	18.064	12	12	20	41.685	52.106	6	8	60	60	18.064	22.579	10	10	25		
22.5	21.676	27.095	10	10	30	62.528	78.16	4	4	100	100	27.095	33.869	8	8	40		
30	28.902	36.127	8	8	40	83.37	104.21	2	3	125	200	36.127	45.159	8	8	50		
45	43.353	54.191	6	8	60	125.06	156.32	2/0	1/0	175	200	54.191	67.738	4	6	70		
75	72.254	90.318	3	4	100	208.43	260.53	300	250	300	400	90.318	112.9	2	3	125		
100	96.339	120.42	1	2	125	277.9	347.38	500	350	350	400	120.42	150.53	2/0	1/0	150		
112.5	108.38	135.48	1/0	1	150	312.64	390.8	600	500	400	400	135.48	169.35	2/0	1/0	175		
150	144.51	180.64	3/0	2/0	200	416.85	521.06	2 x 300	2 x 250	600	600	180.64	225.79	4/0	4/0	225		
200	192.68	240.85	250	4/0	250	555.8	694.75	2 x 500	2 x 350	700	800	240.85	301.06	350	300	350		
225	216.76	270.95	300	250	300	625.28	781.6	2 x 600	2 x 500	800	800	270.95	338.69	500	350	350		
300	289.02	361.27	500	400	400	833.7	1042.1	4 x 300	4 x 250	1100	1200	361.27	451.59	2 x 4/0	2 x 4/0	500		
500	481.7	602.12	2 x 350	2 x 300	800	1389.5	1736.9	4 x 700	4 x 600	1800	2000	602.12	752.65	2 x 500	2 x 400	800		
750	722.54	903.18	3 x 350	3 x 300	1000	2084.3	2605.3	6 x 700	6 x 600	2700	3000	903.18	1129	4 x 300	4 x 250	1200		
	600 Volt						208 Volt						480 Volt					

* All conductors are copper.

Amperes =(KVA x 1000) / (Volts x 1.73)

26-402(1) - Location of Panelboards

In a retrofit where an existing service is upgraded at the same location, the new panel need not be lowered. If the location is otherwise undesirable, reference 6-206(1)(c), the new service shall be made to comply with the current CEC and not located in an **insulated** exterior wall.

26-402(2) - Location of Panelboards

In all new installations in dwelling units, with the exception of the main breaker or disconnect switch, no branch circuit overcurrent device shall be located at a height greater than 1.7 m above the finished floor.

26-700(11) - Receptacles

All 5-15R and 5-20R receptacles, located within 1.5 meters of any sink, shall be protected by a GFCI.

26-702 - Receptacles Exposed to the Weather

Receptacles exposed to weather shall be provided with wet location cover plates as follows:

1. Receptacles of configurations 5-15R, 5-20R, 5-20RA, 6-15R, 6-20R and 6-20RA shall have a wet location cover plate that is approved for wet locations whether or not a plug is inserted into the receptacle;
2. All other receptacles shall have a wet location cover plate that may be approved for wet locations only when the plug is removed; and
3. Notwithstanding the requirements in subrule (1) when these receptacles are installed facing downward, at an angle of 45° or less from the horizontal, standard cover plates may be used.
4. Where receptacles exposed to the weather are installed in surface-mounted outlet boxes, the cover plates shall be held in place by four screws or by some other equivalent means.

26-704 - Receptacles for Maintenance of Equipment on Rooftops

A receptacle is now required, for maintenance purposes, on all commercial or industrial buildings that have rooftop electrical equipment such as RTU's, ventilation, solar panels, etc. This receptacle shall be:

- Protected by a ground fault circuit interrupter of the class "A" type;
- Supplied by a separate branch circuit that does not supply any other outlets or equipment;
- CSA configuration 5-20R;
- Located within 7.5 m of rooftop equipment;
- At least 750 mm off finished roof; and
- Protected from mechanical damage.

26-710(a) - Finished Wall

For the purposes of this Rule, “finished wall” means any wall finished to within 450 mm of the floor with drywall, wood paneling or other like material.

No reference is made to the drywall being taped or painted, only that it be installed.

In a basement, regardless of how it is finished, if the gypsum is installed then the receptacles are required.

Note: If the basement is of Styrofoam block or is insulated with Styrofoam, the National Building Code may require these walls to be finished.

26-710(n) - Outdoor Receptacles for Residential Occupancies

The intent of this rule is that all receptacles installed outdoors of residential occupancies and within 2.5 meters of finished grade, shall be protected by a GFCI. This includes receptacles installed on buildings or structures associated with the residential occupancy such as garages, carports, sheds, posts and fences.

26-712(g)(h) & 26-700(12) – Tamper-Resistant Receptacles

All 5-15R and 5-20R receptacles in a dwelling unit shall be tamper resistant with the exception of receptacles located over 2 m above the floor and receptacles located behind stationary appliances.

This includes receptacles installed on buildings or structures associated with the residential occupancy such as garages, carports, sheds, posts and fences.

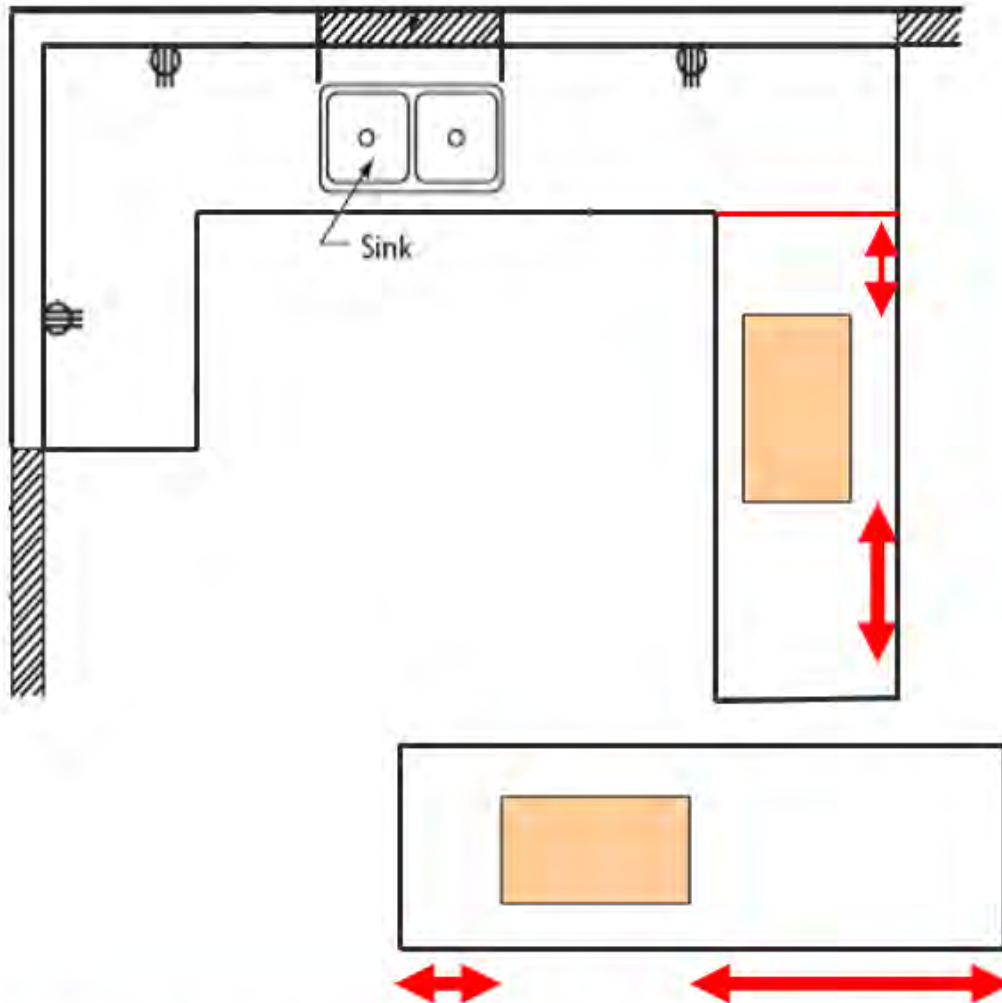
All receptacles of CSA Configuration 5-15R and 5-20R installed in a child care facility shall be tamper-resistant receptacles. For the purpose of this rule “child care facility” means a supervised area containing one or more rooms intended for the designated use of providing educational and personal care services to children.

26-712(d) - Kitchen Receptacles

At least one receptacle installed at each permanently fixed island counter space with a **continuous** long dimension of 600 mm or greater and a short dimension of 300 mm or greater.

At least one receptacle installed at each peninsular counter space with a **continuous** long dimension of 600 mm or greater and a short dimension of 300 mm or greater.

Continuous counter space does not include sinks or cooktops.



**Outlet required for each Continuous Space
Greater than 600 mm**



26-714 & 26-724(a) - Receptacles for Single Dwellings

At least one dedicated separate circuit is required for all outdoor receptacles. More than one dedicated circuit may be installed for outdoor receptacles, but there shall be no interconnection of inside and outdoor receptacles. This does not include the receptacles on a balcony of apartment buildings.

All 5-15R or 5-20R receptacles installed within 2.5 m of the finished grade shall be protected by a GFCI.

Receptacles located in parking lots of apartments, or similar multi-family dwellings, installed solely for the use of automobile heater receptacles in accordance with 8-400, are not required to be protected by a GFCI.

26-714(c) - Receptacles for Garage Door Operators

At least one receptacle shall be provided in a garage for cord connected garage door openers, and located adjacent to and within 1 m of each garage door opener.

26-720(f) - T-Slot Receptacles

The ampere rating of the branch circuit wiring supplying receptacles with CSA Configuration 5-20R shall be 20A.

26-722(f)(h) - Arc Fault Protection for Sleeping Areas

A dwelling unit with permanently installed cooking facilities (i.e. gas or electric range) is deemed to have a cooking facility and thus requires arc fault protection in the sleeping facilities. Cord connected hot plates and/or microwaves do not constitute a cooking facility.

Newly constructed bedrooms require all receptacles to be arc fault protected. Receptacles added to an existing bedroom will require arc fault protection.

26-722(g) - Sump Pumps

It is intended by this rule to allow a **single** receptacle for a cord connected sump pump installed in a sleeping area to be connected to a branch circuit that is not protected by an arc fault circuit interrupter in order to ensure uninterrupted performance of the sump pump.

26-806(1)(5)(6)(7) - Gas Furnaces

The furnace shall be provided with a dedicated circuit. The disconnect shall be located as required by the CEC. See also Section 10, Rule 10-406(4) on page [32](#).

SECTION 28 - MOTORS & GENERATORS**28-110(1) - Aeration Fans**

Services for the supply of motors shall be sized in accordance with Section 28 of the CEC.

The service calculation is based on the total number of fans permanently wired into the electrical panel. The motor disconnect shall be installed within sight of and within 9 meters of the motor, or be lockable at the source. If receptacles are installed to plug in the motors, then the service may be calculated by the number of fans to be utilized at one time.

SECTION 30 - INSTALLATION OF LIGHTING EQUIPMENT**[See Rule 2-102 - For Lighting Retrofits](#)****30-100 - Farm Yard Lights**

Subject to Supply Authority approval, the yard light may be mounted on the transformer pole, provided:

1. It is located below the secondary rack where there is one;
2. With a separation of at least 500 mm between the bottom of the transformer and the fixture base where there is no secondary rack; and
3. On the quadrant of the pole which would not interfere with pole climbing and transformer removal.

The pole mount yard light may be fed from the splitter with a minimum #14 AWG cable approved for the location. A pigtail socket and a 15A fuse (located in the splitter) may be used as overcurrent protection.

SECTION 32 - FIRE ALARMS AND FIRE PUMPS**32-102(1)(c) - Wiring Methods**

New rule allows conductors in PVC as a wiring method for fire alarm systems and does not have to be encased in concrete.

Note: Not allowed for fire pumps, conductors for fire pumps in PVC must still be encased in 50 mm of concrete.

32-110 - Smoke Alarms and Carbon Monoxide (CO) Detectors in Dwelling Units

New construction of residential units shall be pre-wired for interconnected smoke alarms. CO alarms shall be installed as required by the National Building Code. CO alarms will be required in residences with fuel burning appliances or an attached garage.

The National Building Code requires smoke alarms to be permanently connected to an electrical circuit. This circuit may be 120 volt or an extra low voltage system. In either case, the circuit must be permanently installed and supplied from a lighting branch circuit. This circuit must not be arc-faulted or ground fault protected. In the case of an extra low voltage circuit, the transformer must be permanently connected. CO alarms may be battery operated or connected to the lighting branch circuit.

Smoke Alarm Requirements

The requirements for smoke alarms are specified in the Code and in Part 9 of the 2010 edition of the *National Building Code of Canada* (see Articles 9.10.19 and 9.10.21.7).

Location Requirements

Smoke alarms must be installed on each floor level, including basements, 900 mm or more above or below an adjacent floor level. Each bedroom must be protected by a smoke alarm in the bedroom and outside. When outside the bedroom, it must be installed within 5 m of the bedroom door. This measurement must be made along the corridors and through the bedroom door, not through walls or openings in walls.

The maximum distance between smoke alarms on the same floor in rooms other than bedrooms is 15 m. This measurement must be made along corridors and through doorways, not through walls or openings in walls.

Smoke alarms must be installed on the ceiling or near the ceiling (see Article 9.10.19.2 of the *National Building Code of Canada*).

Carbon Monoxide (CO) Alarm Requirements

The requirements for CO alarms are specified in the Code and in the 2010 edition of the *National Building Code of Canada* (see Articles 6.2.4, 9.32.3.8 and 9.32.3.9).

Location Requirements

A CO alarm must be mounted at the manufacturer's recommended mounting height or if not available, on or near the ceiling of a room or area in a dwelling unit containing a solid-fuel-burning appliance (see Article 6.2.4 of the *National Building Code of Canada*).

If the unit/suite in a residential occupancy contains a fuel-burning appliance or shares a wall with a storage garage, a CO alarm must be located inside each bedroom or outside each bedroom within 5 m of each bedroom door, measured following corridors and doorways (see Articles 8.2.4 and 9.32.3.9 of the *National Building Code of Canada*).

32-208 - Fire Pump Transfer Switch

Where an on-site electrical transfer switch is used to provide emergency power supply to fire pump equipment, this transfer switch shall be used solely for the fire pump.

Note: See Figure 8 diagram on page [67](#).

SECTION 36 - HIGH VOLTAGE INSTALLATIONS

36-214(2) - Disconnecting Means

This rule previously called for Load Break Disconnects, other than the draw-out type, to have contacts visible for inspection in the open and closed positions. This has been changed to only require being visible in the open position.

Minimum Distances from Exposed Energized High Voltage Electrical Conductors

Risk Factor		Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Voltage Phase to Phase	Voltage to Ground	Non-electrical Workers, Material, Equipment	Qualified Electrical Workers	Vehicles and Load	Limit of approach for utility tree trimmers using conducting objects exposed to energized parts	Limit of approach for utility tree trimmers using rated tools to exposed energized parts	Limit of approach for utility tree trimmers using rated insulating booms
kV	kV	Metres	Metres	Metres	Metres	Metres	Metres
230	133	6.1	1.4	1.83	2.4	1.41	1.85
138	79.8	4.6	1	1.22	1.9	0.92	1.35
72	41.6	4.6	0.6	0.8	1.6	0.61	1.05
25	14.4	3	0.3	0.6	1.2	0.12	0.55
15	8.6	3	0.3	0.6	1.1	0.12	0.55
4.16	2.4	3	0.15	0.6	1.05	0.04	0.50
0.75	0.75	3	0.15	0.6	1.05	0.04	0.05

Reference OH&S Regulations Table 22

SECTION 38 - LIFT FOR PERSONS WITH PHYSICAL DISABILITIES**38-061 - Outdoor Wheelchair Lifts**

In accordance with the manufacturer's instructions, when a receptacle is required for an outdoor wheelchair lift, it shall be a single receptacle connected to a separate circuit and shall not be ground fault protected.

SECTION 46 - EMERGENCY SYSTEMS, UNIT EQUIPMENT AND EXIT SIGNS AND LIFE SAFETY SYSTEMS**46-108 - Wiring Methods**

Definition - Life Safety System - emergency lighting and fire alarm systems that are required to be provided with an emergency power supply from batteries, generators or a combination thereof, and electrical equipment for building services such as fire pumps, elevators, smoke-venting fans, smoke control fans and dampers that are required to be provided with an emergency power supply by an emergency generator in conformance with the National Building Code of Canada.

New rule allows conductors in **PVC** as a wiring method for:

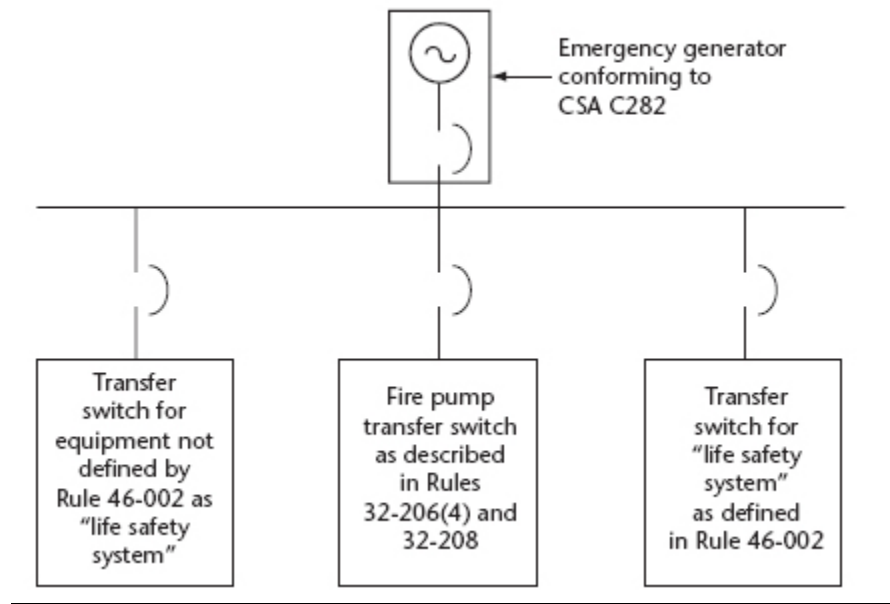
1. life safety systems;
2. installed between an emergency power supply and life safety systems.

Note: for fire pumps, PVC must be encased in 50 mm of concrete.

46-202 - Types of Emergency Power Supply

(3) Requires generators to start and provide power when utility power is disconnected or fails to **any** transfer switch. Examples - fire pump, life safety system, emergency or backup power.

46-108(5), Figure 8, Appendix B



46-204 - Protection of Electrical Conductors

Definition: Emergency Power Supply - emergency power supplied by a generator, batteries or a combination thereof, that is required by the National Building Code of Canada.

All power, control and communication conductors between an emergency generator and electrical equipment required to be installed as a part of the emergency power supply and **located outside the generator** room shall be protected against fire exposure to provide continued operation in compliance with the National Building Code (NBC) of Canada.

The requirement of one (1) hour fire rating is NBC and may be achieved by using cable with at least one (1) hour fire rating, encasing in concrete with thickness to achieve this rating or being in a shaft with a one (1) hour fire rating.

48-208(1) - Overcurrent Protection (Emergency Power Supply)

Where an emergency generator is installed to supply power to life safety systems (as defined in 46-002), a selective coordination report will be required and submitted to Electrical Inspections. The intent of selective coordination is to isolate the faulted circuit (due to overcurrent or short circuit) while maintaining power to the rest of the electrical distribution. This includes, but is not limited to, the following systems or circuits: fire alarms, lighting, elevators and fire pumps (in health care facilities, commercial buildings, industrial facilities, public buildings, etc.).

SECTION 50 - SOLAR PHOTOVOLTAIC (PV) SYSTEMS

50-004 - Marking of PV Output Disconnect

The PV disconnect must be **permanently identified** as the PV disconnect and have **permanently marked**:

- rated operating current and voltage;
- max source circuit voltage; and
- rated short circuit current.

50-012 - Overcurrent Protection for Apparatus and Conductors

Overcurrent protection for PV strings must not be greater than the max fuse rating on the panel nameplate.

Overcurrent devices must be accessible.

50-018 - Wiring Methods

- Flexible cords suitable for extra hard usage may be used for interconnection of panels;
- Conductor type RPVU may be used for interconnection of panels where inaccessible to the public or made inaccessible;
- Conductor type PVU may be used for interconnection of panels when contained in a raceway;
- RPVU and PVU entering a building must be in a raceway. Warning labels must be provided where conductors from more than one DC source are contained in the same **junction box, enclosure or multiple-channel raceway**.

50-020(2) - Single Conductor Attachment Plugs

Single conductor attachment plugs that are readily accessible, in circuits over 30 volts, require the use of a tool to open the connection.

50-026 - Grounding

For a grounded system, the grounding connection is to be made at a single point. Where the supply system incorporates a GFPD, the grounding conductor may be connected to ground through this device.

The grounding conductor shall be in accordance with Rule 10-812.

The grounding conductor may be:

1. Connected to the AC grounding electrode; or
2. Connected to a separate DC grounding electrode and bonded to the AC electrode if required by 10-702(b); or
3. The AC bonding conductor if continuous and sized from Table 16 but does not have to be larger than the largest ungrounded conductor in the circuit.

SECTION 62 - FIXED ELECTRICAL SPACE AND SURFACE HEATING SYSTEMS

62-114 - Overcurrent Protection

The following information has been prepared for ease of reference when sizing overcurrent protection and conductor sizes for heating equipment.

Electric Furnace and Other Heating Equipment
Single Phase 240V
Ref. C.E.C. 62-114(6) and (7)

Nameplate Furnace or Rating (KW)	Conductor Size at 75°C		Fuse C.B. Rating
	Copper	Aluminum	
5 KW	No. 12 AWG R90	No. 10 AWG R90	30 Ampere
10 KW	No. 8 AWG R90	No. 6 AWG R90	60 Ampere
15 KW	No. 4 AWG R90	No. 2 AWG R90	100 Ampere
18 KW	No. 4 AWG R90	No. 2 AWG R90	100 Ampere
20 KW	No. 3 AWG R90	No. 1 AWG R90	125 Ampere
23 KW	No. 3 AWG R90	No. 1 AWG R90	125 Ampere
25 KW	No. 1 AWG R90	No. 0 AWG R90	150 Ampere
30 KW	No. 0 AWG R90	No. 000 AWG R90	175 Ampere

A sample selection for a 20 KW furnace follows: The ampacity of the conductors supplying the furnace and the size of the overcurrent devices are determined by applying Rule 62-114.

The overcurrent device for the service must be sized so that the total connected load of the heating equipment does not exceed 80% of the rating of the overcurrent device in accordance with subrule (6). In this case, the load is 83.3 amps; the minimum size of overcurrent device is $83.3/0.8 = 104$ Amperes. The next available fuse is 125 Amperes.

Since this fuse is supplying a heating load, Rule 14-610 requires that the fuses be a time delay type or HRC Form I.

The conductor size is determined by applying subrule (7) of 62-114. The conductor must have the ampacity sufficient to carry the load and must have an ampacity rating at least 80% of the rating or setting of the branch circuit overcurrent device. A conductor rated at 100 amperes, i.e. #3 AWG R90 (Column 3 of Table 2) would satisfy these requirements.

Based on the conduit fill requirements of Rule 12-1014 and Tables 6 and 10, it can be determined that the 2 #3 AWG R90 conductors require a 1" diameter conduit.

62-116 - Demand Factors for Service Conductors and Feeders

(3) Electric furnace loads shall be deemed to have a demand factor of 100% when calculating service size for residential occupancy.

62-202 - Location for Temperature Control

1. A manually operable controls for an electric heater in a bathroom is to be located at least 1 m from the bathtub or shower stall.
2. If 1 m is not practicable, it is allowed to be located not less than 500 mm from a bathtub or shower stall, provided it is:
 - a) protected by a ground fault circuit interrupter of the class A type; or
 - b) supplied by a Class 2 circuit operating at not more than 42.4 V peak or dc.

62-208(3)(4)(5) - Installation of Central Units

Each unit requires a single disconnect or if more than 1 circuit is required, the disconnects must be grouped together, i.e. Geothermal systems.

The disconnect(s) must be within sight of the unit and within 9 meters. This does not include internal disconnects that are part of the central unit.

62-226 - Infrared Radiant Heaters of the Metal Sheath-Glowing Element Type

Ground fault protection is required to de-energize all normally ungrounded conductors of fixed infrared heaters with a ground fault setting sufficient to allow normal operation of the heater.

SECTION 64 - RENEWABLE ENERGY SYSTEMS

64-006 - Conductors of Different Systems

Conductors of renewable energy systems are to be separated from different systems in accordance with Rules 12-904(2) and 12-3030.

For the purpose of this Rule, multiple inverters and associated components connected to the same renewable source are considered as one generation source and associated wiring may be contained in the same raceway.

64-010(3)(4) - Overcurrent Protection

Overcurrent devices marked or approved only for AC use shall not be used in DC circuits.

Equipment acceptable for automotive, marine and telecommunications applications, although used in these DC systems, may not be suitable for use in permanent renewable energy systems meeting the requirements of this Code.

Circuit breakers that are marked “Line” and “Load” have been evaluated for connection only in the direction marked.

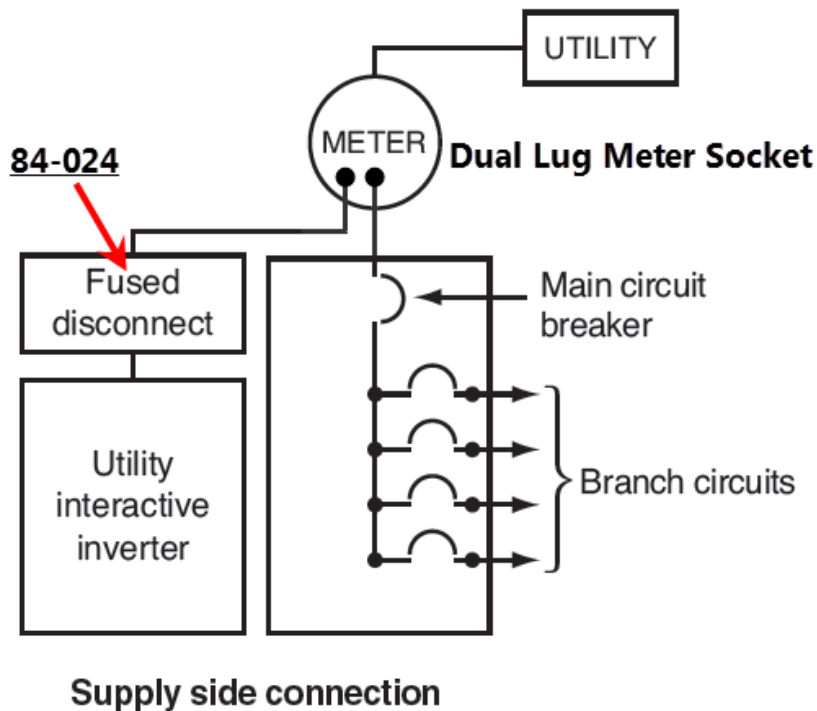
Circuit breakers without “Line” and “Load” have been evaluated for connection in both directions.

64-012(1)(2)(3)(4)(5)(6) - Disconnecting Means

The disconnect must simultaneously disconnect all current-carrying conductors supplied from a renewable energy power supply source from all other conductors in a building.

Because renewable energy is a power production source, the disconnect must be in accordance with Rule 84-024 and be:

- located within sight of and within 9 m of the equipment; or
- integral to the equipment; and
- If used as the service disconnect, approved for service entrance equipment.



A disconnecting means shall be provided to disconnect equipment such as inverters, batteries and charge controllers from all ungrounded conductors of all sources.

A switch or circuit breaker shall not be installed in a grounded conductor if operation of that switch, circuit breaker or other device leaves the grounded conductor in an ungrounded and energized state.

Where the equipment is energized from more than one supply source, the disconnecting means shall be grouped and identified and marked with a warning that the terminals on both the line and load sides may be energized when open.

64-014 - Wiring Methods

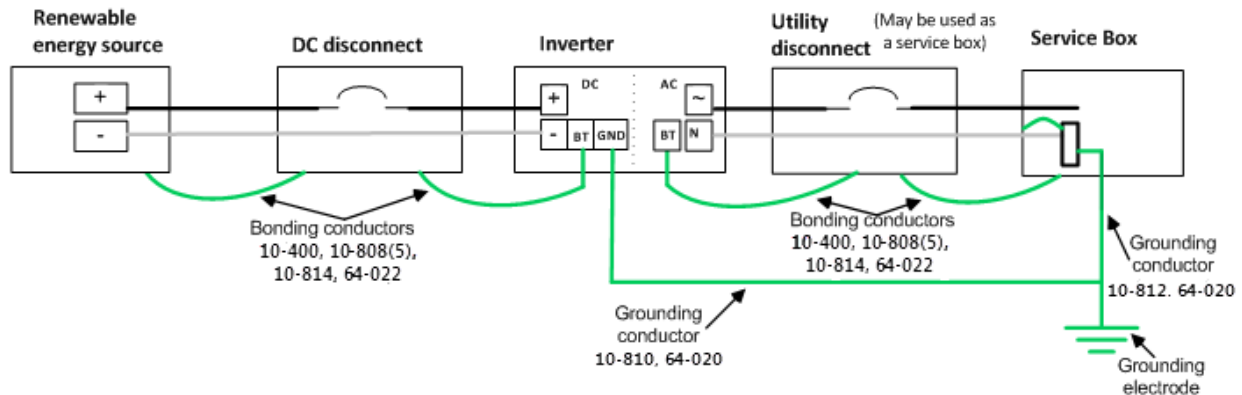
Conductors for DC renewable energy sources or supply that are installed inside a structure to the first readily accessible disconnecting means must be contained in metallic raceways, metal enclosures or cables with a metal armor.

64-020(1)(2) - Grounding

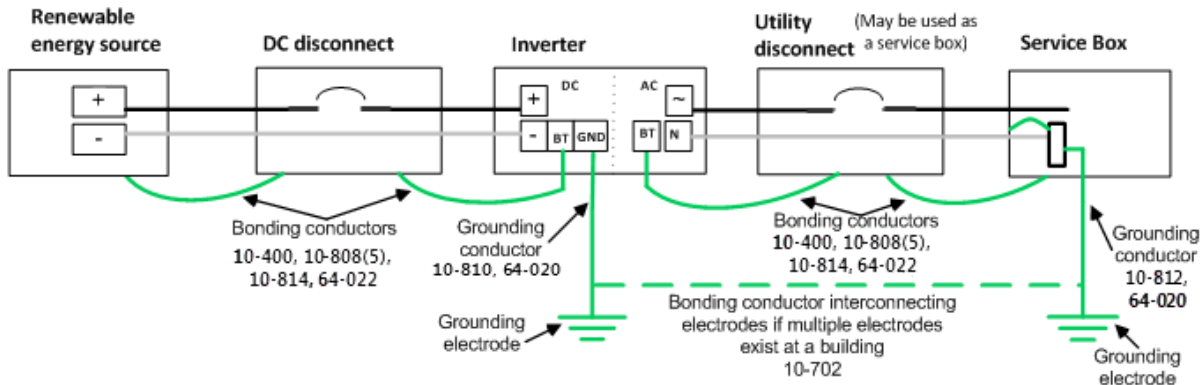
Grounding for alternating-current and direct-current systems to be installed in accordance with Section 10.

Alternating-current and direct-current renewable energy power systems to be grounded by one of the following means:

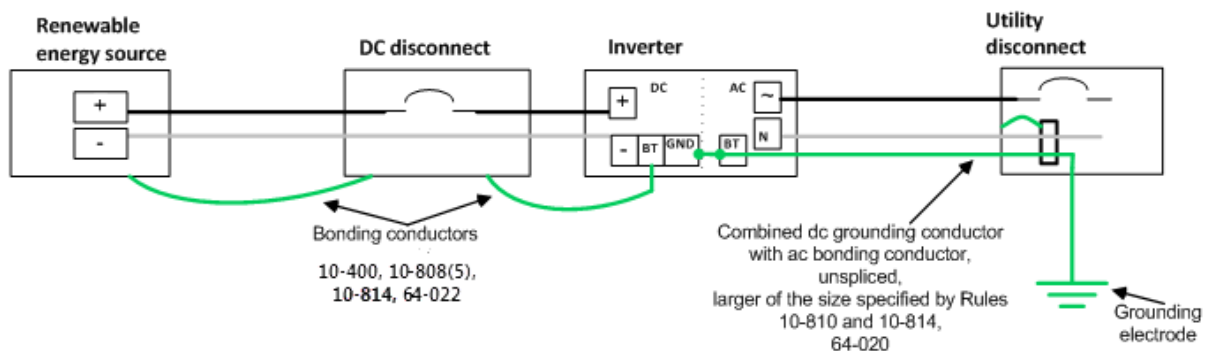
Rule 64-020(2)(a) Grounding electrode requirements



Rule 64-020(2)(b) Grounding electrode requirements



Rule 64-020(2)(c) Grounding electrode requirements



64-024 - Marking

For interactive system(s) at the points of interconnection, each disconnecting means are to be marked with the maximum AC output operating voltage and current.

64-026(2) - Warning Notice and Diagram

In buildings with a utility service and a renewable energy system, where practical, their disconnects are to be grouped. Where not practicable, permanent plaques are to be posted on or near each disconnecting means indicating the location of all other service boxes supplying power to the building.

64-030 - Interconnected System Connection

(1) The output of a utility-interactive inverter connected to the supply authority system must be in accordance with Section 84.

(2) A utility-interactive inverter for interconnection to the supply authority is to be specifically approved for the purpose and so marked.

Output of a utility-interactive inverter is allowed to be connected to the line side of the service disconnecting means at a dual lug meter socket or other source(s).

The output of a utility-interactive inverter is allowed to be connected to the load side of the service disconnecting means provided that each source interconnection is made at a dedicated circuit breaker or fusible disconnecting means.

64-102 - Max Circuit Loading Inverters

The circuit conductors between the inverter output and the building or structure disconnecting means shall be:

- Sized according to the output rating of the inverter and provided with overcurrent protection located at the output of the inverter, in accordance with Section 14.

Example

Rated inverter output - 30 Amps
Continuous rating is 125%
 $30 / .8 = 37.5\text{A}$ conductor
From Table 2 - #8 @75 degrees
Breaker - 50 Amps

64-114 - Utility-Interactive Point of Connection

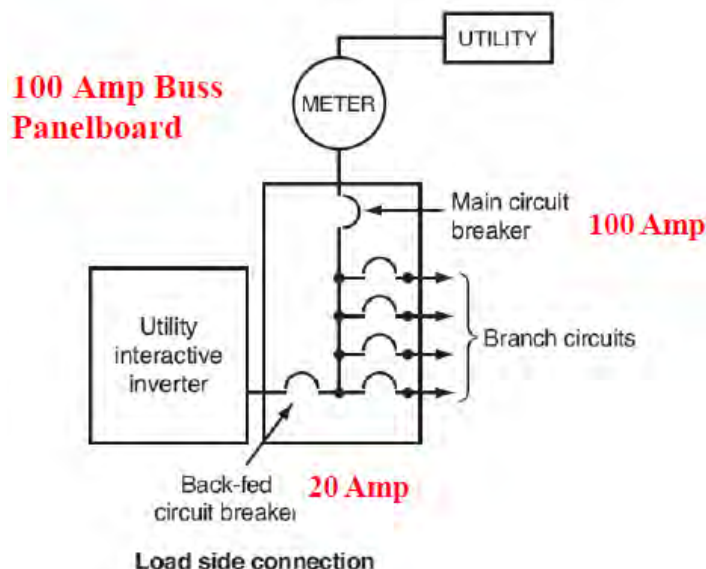
Each panelboard, busbar or conductor supplied by interactive systems requires:

- Warning signs adjacent to each source disconnecting means to indicate that all of the disconnecting means must be opened to ensure complete de-energization of the equipment;
- The point of connection positioned at the opposite (load) end from the input feeder location or main circuit location, where the panelboard is rated less than the sum of the ampere ratings of all overcurrent devices in source circuits supplying the panelboard; and
- A permanent warning label at the distribution equipment to indicate that the overcurrent device not be relocated.



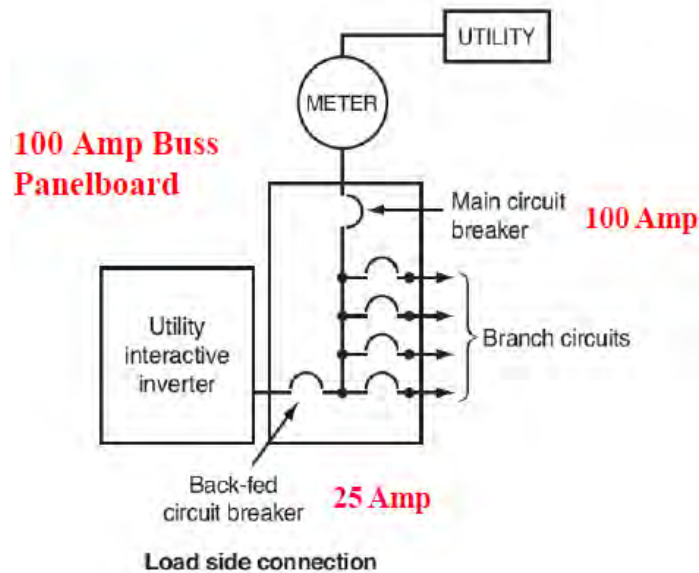
Non-Dwelling Units

The sum of the ampere ratings of overcurrent devices supplying power to a busbar is allowed to exceed the rating of the busbar to a **maximum of 120%**.



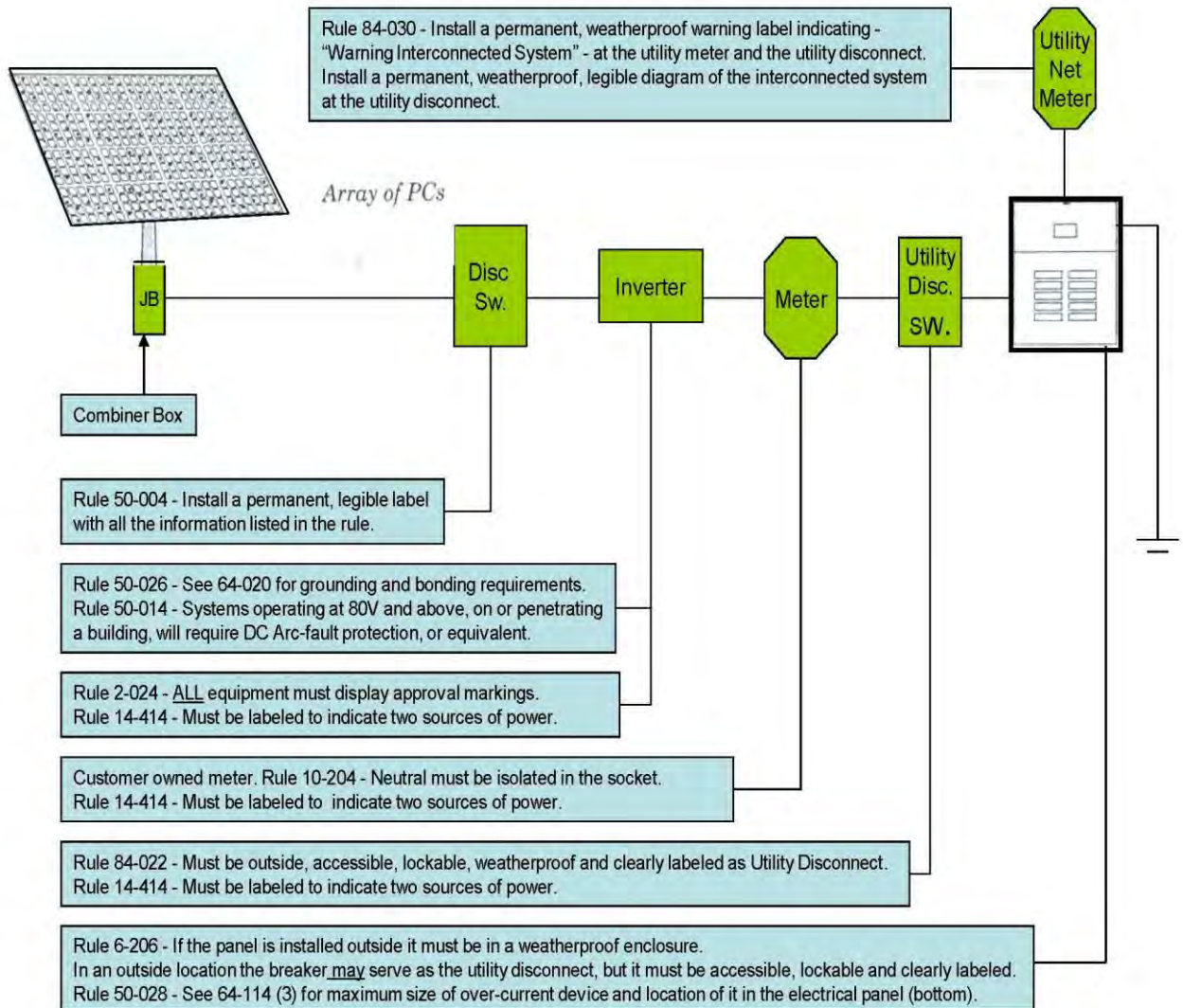
Dwelling Units

The sum of the ampere ratings of overcurrent devices supplying power to a busbar is allowed to exceed the rating of the busbar to a **maximum of 125%**.



Electrical Inspections

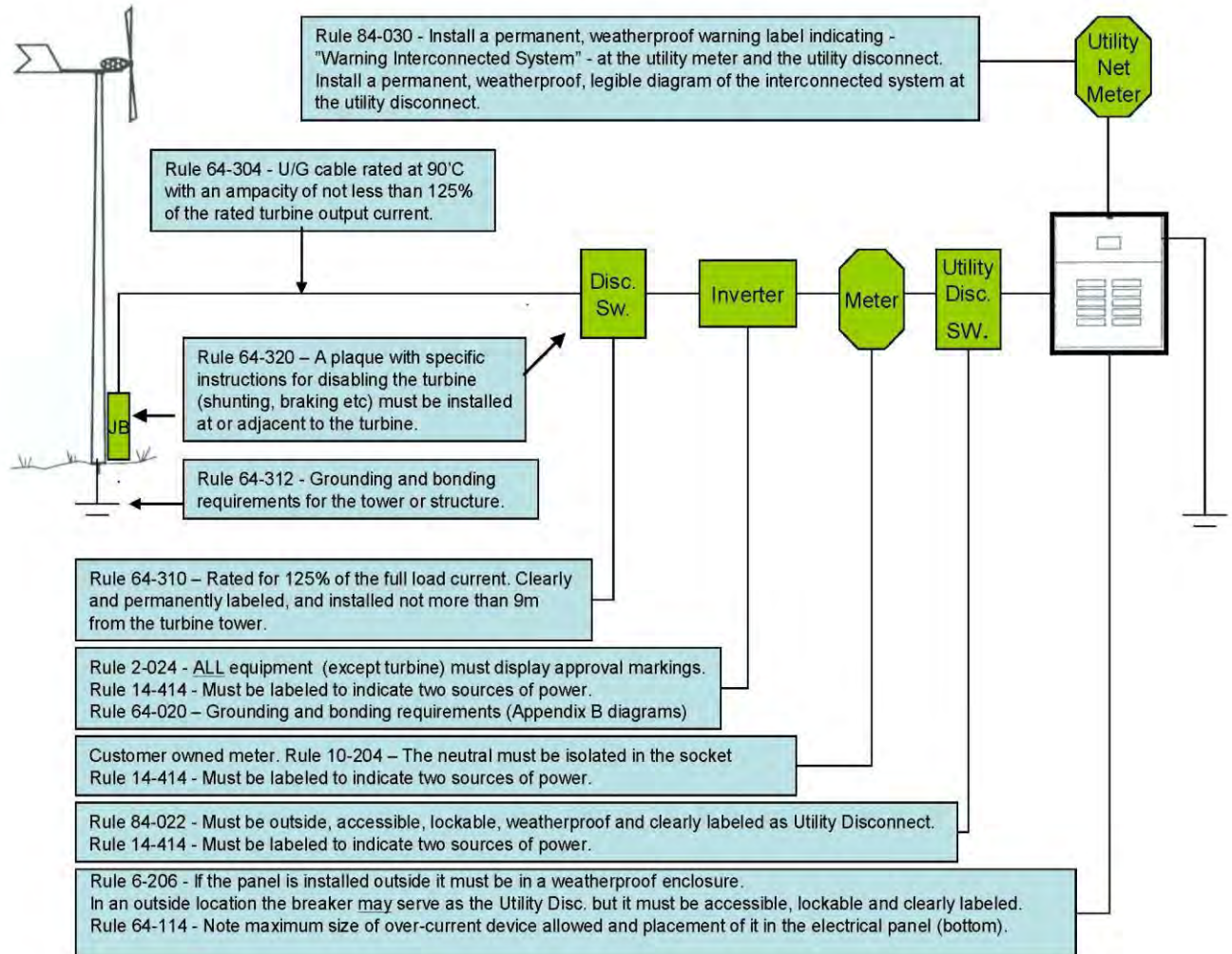
Solar Installation



- Note:**
1. All the required labels and diagrams must be installed before the installation will be approved.
 2. All wiring must be done by a licensed Saskatchewan Electrical Contractor and be covered by an appropriate electrical permit. Homeowner Permits are not allowed.
 3. It is the responsibility of the Electrical Contractor to arrange for an inspection 2 weeks prior to requesting a network service connection.
 4. When Network Metering is installed, SaskPower Customer Services must approve all connection diagrams before the installation begins.

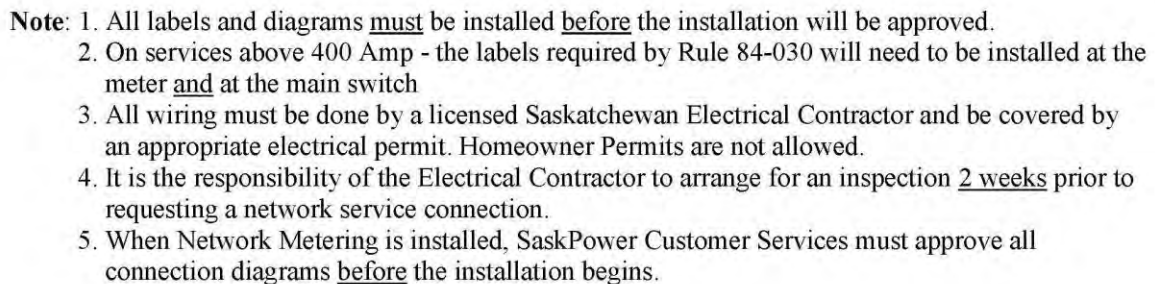
Electrical Inspections

Wind Turbine Installation



- Note:**
1. All labels and diagrams must be installed before the installation will be approved.
 2. All wiring must be done by a licensed Saskatchewan Electrical Contractor and be covered by an appropriate electrical permit. Homeowner Permits are not allowed.
 3. It is the responsibility of the Electrical Contractor to arrange for an inspection 2 weeks prior to requesting a network service connection.
 4. When Network Metering is installed, SaskPower Customer Services must approve all connection diagrams before the installation begins.

Rural Wind Turbine Installation (Optional)



SECTION 68 - POOLS, TUBS AND SPAS

68-054 - Utility Conductors Over Pools

Electric utilities may not permit open service conductors to be located directly over a swimming pool, hot tub or spa.

A pool shall be deemed to include:

- permanently installed and storable swimming pools;
- hydromassage bathtubs;
- spas and hot tubs;
- wading pools;
- baptismal pools;
- decorative pools; and
- splash pads.

68-068(7)(b) - Ground Fault Circuit Interrupters

Spas and Hot Tubs require GFCI protection regardless of equipment location.

68-308 - Other Electrical Equipment

No other (unrelated) equipment is to be fed from a circuit feeding a hydro massage bathtub.

Access must be provided to all electrical equipment including the pump motor.

As per Rule 2-118 - Minimum 400 mm x 400 mm access panel.

SECTION 72 - MOBILE HOME AND RECREATIONAL VEHICLE PARKS

72-102(2) - Demand Factors for Service and Feeders

When doing a service or feeder calculation for an RV park, the calculated load is considered a continuous load as per Rule 8-104.

SECTION 76 - TEMPORARY WIRING

76-004 - Grounding and Bonding

Temporary Services must have a main service breaker and be grounded to **two ground rods**, or **one ground plate**.

76-006 - Service Entrance Equipment

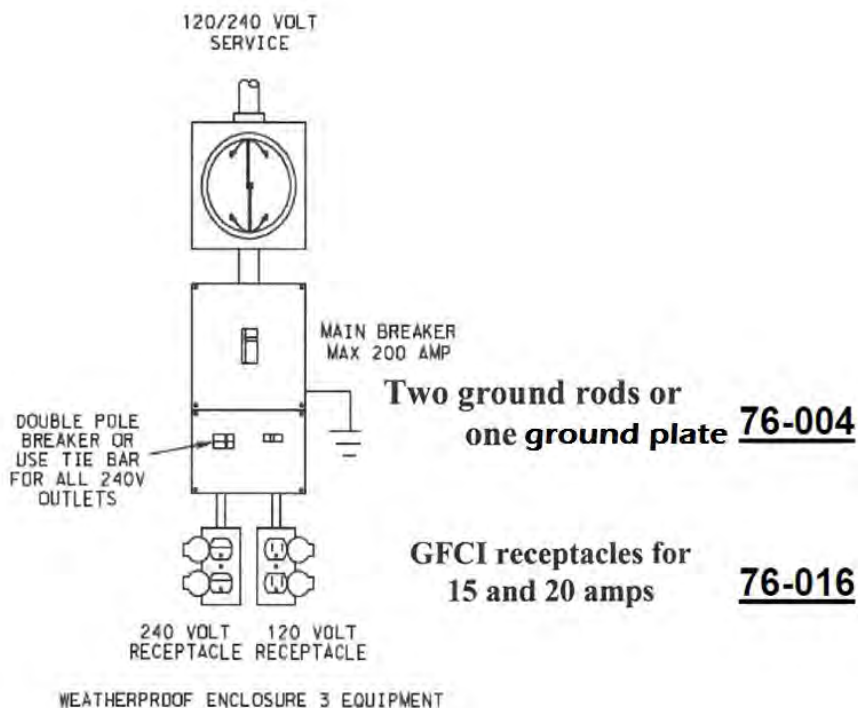
When located in an outdoor location, these services must be of weather-proof construction.

Temporary Services are allowed to be connected for no more than 24 months.

76-016 - Receptacles

All temporary service receptacles of 5-15R and 5-20R are to be ground fault protected.

Receptacles installed in a building under construction that are part of the permanent wiring system will not require ground fault protection.



SECTION 80 - CATHODIC PROTECTION

80-008 - Branch Circuit

The previous rule called for the Cathodic rectifier to be fed from a separate circuit that was capable of being locked in the “on” position. The new rule has removed the **lockable** requirement.

80-010 - Disconnecting Means

(1) A separate disconnecting means shall be installed at a point readily accessible to the users and within sight of and within 15 m of a rectifier unit of a cathodic protection system.

(2) Notwithstanding subrule (1), a disconnecting means integral to the rectifier unit shall be permitted to serve as the disconnecting means required in subrule (1) provided the rectifier enclosure is rendered inaccessible to unauthorized persons by an external lockable cover.

(3) The disconnecting means referred to in subrule (1) shall be labeled in a conspicuous, legible and permanent manner identifying it as the disconnecting means for a cathodic protection system.

SECTION 84 - INTERCONNECTION OF ELECTRIC POWER PRODUCTION SOURCES

84-000 - Portable Generators

As with all electrical equipment, portable generators and associated equipment must be approved and carry the mark of a recognized certification agency. Although recommended in the manuals of many power take-off generators, welding cable is not an approved wiring method and will not be accepted.

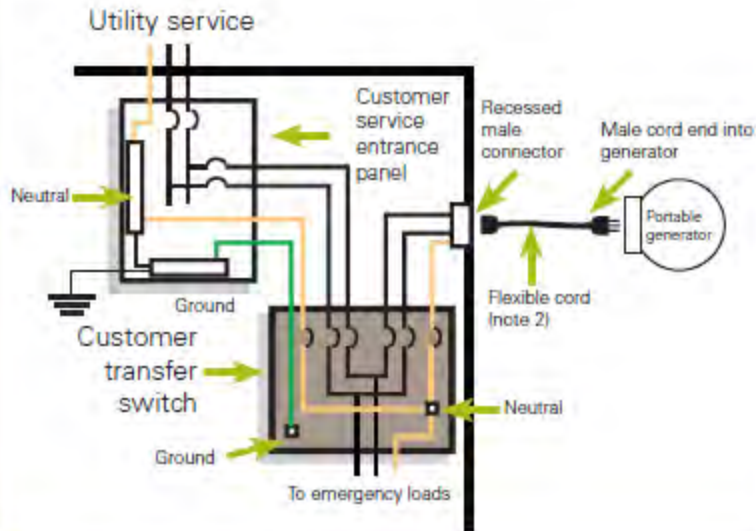
Recessed male receptacles shall be used as an interface to the generator.

Generators and associated equipment (i.e. transfer switches, etc.) must be installed by a licenced electrical contractor and the appropriate permit must be submitted.

These diagrams show typical installation configurations. For other installation configurations, contact a licensed electrical contractor or a SaskPower Gas and Electrical Inspections office.

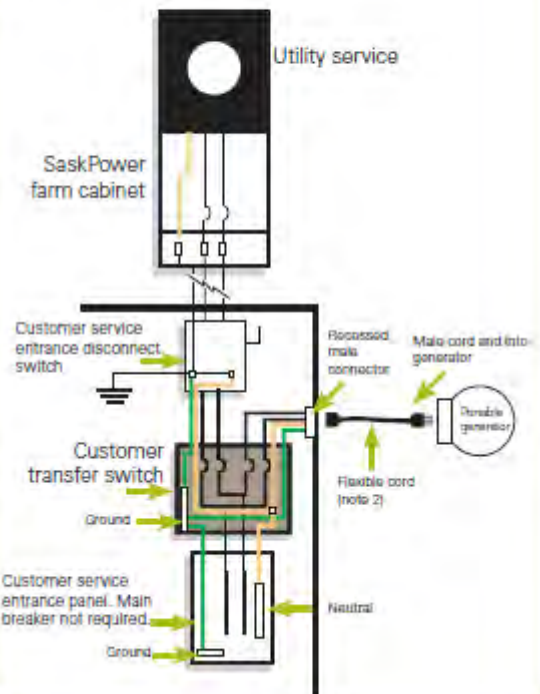
Residential Service Customer transfer switch required.

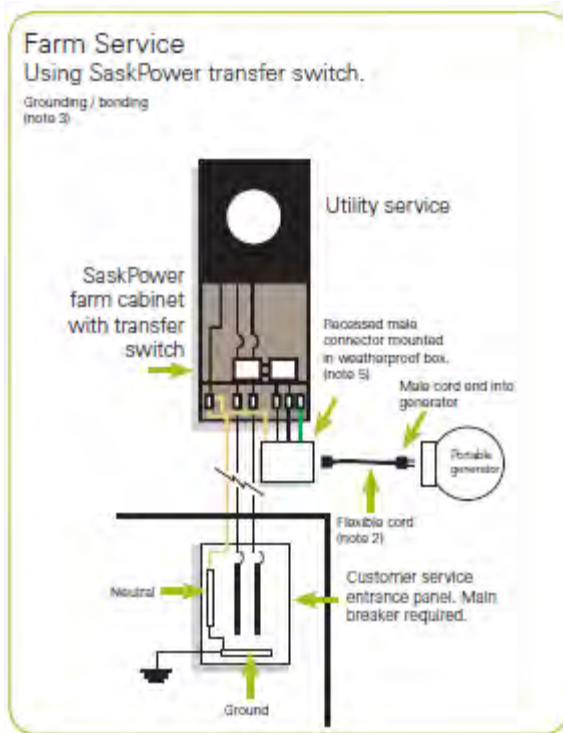
Example with neutral bonded to frame
(note 3 & 4)



Farm Service Using customer transfer switch.

Example with neutral floating
(note 3)





Notes

1. Rewiring or tampering with a generator unit voids CSA certification.
2. Conductors must be sized to match the maximum output of the generator.
3. Follow generator manufacturer's installation, grounding and operation instructions.
4. A three-pole transfer switch must be used when the generator neutral is bonded to the frame.
5. Permission is required from your local SaskPower district office to install this connector on a transformer pole.

SECTION 86 - ELECTRIC VEHICLE CHARGING**86-300 - Branch Circuits**

- Electric vehicle charging equipment requires a separate circuit 20A-5-20R;
- Each must be labeled for its purpose; and
- GFCI if outdoors and within 2.5 meters of grade.

Electrical Inspections Phone Listing

SaskPower Electrical Inspections Division

Mike Anderson - Chief Electrical Inspector, Regina 566-2515, Cellular 535-9920

Scott Mccorriston - Supervisor Electrical Inspector, Regina 566-2516, Cellular 536-4122

Rod Pack - Supervisor Electrical Inspector, Saskatoon 934-7720, Cellular 291-8126

Dawn Orr –Supervisor Business & Technical Svs, Regina 566-2504, Cellular 530-8044

Phoukham Phommavong - Electrical Plans Review, Regina 566-2596; Cellular 531-6445

Dean Schill - Training Coordinator, Yorkton; Cellular 641-6676

Guy Brideau - Compliance Inspector, Regina 566-2531; Cellular 533-0922

<p>Regina Office Address #177-1621 Albert Street Regina, SK, S4P 0S1 Toll Free: 1-888-757-6937 Fax 566-2906</p>	<p>Saskatoon Office Address 1370 Fletcher Road; P.O. Box 1560 Saskatoon, SK, S7H 0V1 Toll Free: 1-888-757-6937 Fax 934-7736</p>
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Office Location & Area	Electrical Inspector	Address
Estevan	Cell 421-9390	234-5th Street Estevan S4A 0X8
Kindersley	Cell 463-7196	P.O. Box 1119, Hwy#7 East Kindersley S0L 1S0
Kindersley	Cell 460-9608	P.O. Box 1119, Hwy#7 East Kindersley S0L 1S0
Lloydminster	Cell 821-0330	4005-52nd Street Lloydminster S9V 2B5
Moose Jaw	Cell 630-5311	880 Lillooet St. West, Box 1240 Moose Jaw S6H 4P9
Moose Jaw	Cell 631-1731	880 Lillooet St. West, Box 1240 Moose Jaw S6H 4P9
North Battleford	Cell 441-0511	P.O. Box 550; 9905 Thatcher Ave North Battleford S9A 2Y7
North Battleford	Cell 441-3219	P.O. Box 550; 9905 Thatcher Ave North Battleford S9A 2Y7
Prince Albert	Cell 961-2634	Box 5900; 1330 Central Avenue Prince Albert S6V 7V6
Prince Albert	Cell 930-9268	Box 5900; 3050 2nd Ave W Prince Albert S6V 7V6
Prince Albert	Cell 961-7470	Box 5900; 3050 2nd Ave W Prince Albert S6V 7V6
Regina	Cell 536-6550	#177-1621 Albert Street. Regina S4P 0S1
Regina	Cell 529-6992	#177-1621 Albert Street. Regina S4P 0S1

Office Location & Area	Electrical Inspector	Address
Regina	Cell 536-4665	#177-1621 Albert Street. Regina S4P 0S1
Regina	Cell 536-4121	#177-1621 Albert Street. Regina S4P 0S1
Regina	Cell 529-6035	#177-1621 Albert Street. Regina S4P 0S1
Regina	Cell 536-6549	#177-1621 Albert Street. Regina S4P 0S1
Saskatoon	Cell 221-2960	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Saskatoon	Cell 222-7794	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Saskatoon	Cell 221-0918	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Saskatoon	Cell 221-0916	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Saskatoon	Cell 221-0913	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Saskatoon	Cell 222-4819	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Saskatoon	Cell 220-8233	1370 Fletcher Road, P.O. Box 1560 Saskatoon S7K 3R3
Swift Current	Cell 741-2807	1800 Aberdeen St., Box 580 Swift Current S9H 3W4
Swift Current	Cell 741-0343	1800 Aberdeen St., Box 580 Swift Current S9H 3W4
Swift Current	Cell 750-1489	1800 Aberdeen St., Box 580 Swift Current S9H 3W4
Tisdale	Cell 873-7399	Box 1900; 316 Heritage Road Tisdale S0E 1T0
Tisdale	Cell 852-7946	Box 1900; 204-1105 99th St Tisdale S0E 1T0
Weyburn	Cell 461-9961	P.O. Box 2004 Weyburn S4H 3M4
Weyburn	Cell 861-5866	P.O. Box 2004 Weyburn S4H 3M4
Yorkton	Cell 621-1592	300 Broadway Street W Yorkton S3N 0M1
Yorkton	Cell 621-1102	300 Broadway St. W Yorkton S3N 0M1

